CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. R2-2005-0030
NPDES PERMIT NO. CA0005053

REISSUING WASTE DISCHARGE REQUIREMENTS FOR:
CONOCOPHILLIPS
SAN FRANCISCO REFINERY AT RODEO
1380 SAN PABLO AVENUE
RODEO, CONTRA COSTA COUNTY

FINDINGS

The California Regional Water Quality Control Board, San Francisco Bay Region, hereinafter called the Board, finds that:

1. *Discharger and Permit Application.* ConocoPhillips (hereinafter called the Discharger) applied to the Board for reissuance of waste discharge requirements and a permit to discharge treated wastewater and stormwater to waters of the State and the United States under the National Pollutant Discharge Elimination System (NPDES).

Facility Description

2. The Discharger operates a petroleum refinery with an average crude-run throughput of approximately 75,000 barrels per day. The Rodeo Refinery receives crude oil and other feedstocks by tankers or pipelines, and delivers refined products to customers via tanker/barge, rail cars, trucks, and pipelines. Crude oil is cracked and processed at the site to produce gasoline, diesel fuel, jet fuel, butane, fuel oil, and other petroleum products. Sulfur and petroleum coke are produced as by-products. According to 40 CFR Part 419.20, the U.S. Environmental Protection Agency (USEPA) has classified this facility as a cracking refinery.

3. The USEPA and the Board have classified this Discharger as a major discharger.

Purpose of Order

4. This NPDES permit regulates the discharge of effluent from the Discharger's wastewater treatment plant (WWTP) and the discharges of all storm water associated with industrial activity from the refinery to San Pablo Bay, a water of the United States. These discharges are currently governed by Waste Discharge Requirements specified in Order No. 00-015, adopted by the Board on March 15, 2000.

Discharge Description

5. The discharges are described below and are based on information contained in the Discharger's Report of Waste Discharge (ROWD) and recent self-monitoring reports. Figure 1 of this Order shows the location for all discharge points (i.e., process wastewater, once-through cooling water, and stormwater), and Figure 2 shows the flow process diagram.

a. **Waste 001** used to consist of 0.9 million gallons per day (mgd) of non-contact once-through salt cooling water, and 0.1 mgd of water from the onsite demineralization plant. On January 24, 2003, the Discharger discontinued this discharge, and began to combine this water with Waste 003. In May 2004, the Discharger reports that it plugged the last 40 feet of the outfall pipe and sump by filling them with concrete.

b. **Waste 002** consists of about 2.7 mgd of process wastewater, boiler blowdown, cooling tower blowdown, sanitary wastewater, sour water stripper bottoms, groundwater, stormwater runoff, offsite wastewater generated at other ConocoPhillips owned facilities and/or remediation activities conducted by the Discharger, and cargo hold washwater. Waste 002 is treated at the on-site wastewater treatment plant prior to being discharged to San Pablo Bay through a 6,000-foot, 18-inch diameter outfall pipe. The outfall, referred to as E-002, terminates with a multi-port diffuser (lat. 38°03′22″, long. 122°15′36″). Table 1 below describes the quality of treated effluent (E-002) based on self-monitoring data from 2001 through 2004.

Table 1: Summary of Pollutants in Treated Wastewater at E-002

Parameter	Average[1]	Daily Maximum
pH, standard units	5.7 (minimum)	8.8
Temperature (°F)	58 (minimum)	97
Total Coliform Organisms (MPN/ 100 mL)	< 20	40
BOD (mg/L)	4.5	8.5
COD (mg/L)	30	85
TSS (mg/L)	12	190
Ammonia as N (mg/L)	0.64	9.2
Oil and Grease (mg/L)	1.3	7.0
Total Phenols (µg/L)	ND	18
Arsenic (µg/L)	2.9	9.1
Cadmium (µg/L)	0.10	0.4
Chromium VI (µg/L)	ND	1.6
Copper (µg/L)	11	46
Lead (µg/L)	0.3	3.1
Mercury (µg/L)	0.028	0.518
Nickel (µg/L)	3.1	12
Selenium (µg/L)	16	49
Silver (µg/L)	ND	0.44
Zinc (µg/L)	9.9	34
Cyanide (µg/L)	ND	9.0

[1] Nondetect (ND) values were replaced with ½ the detection limit. In cases where more than half the data are ND, the average indicated in Table 1 is ND.

c. **Waste 003** consists of approximately 31 MGD of non-contact once-through salt cooling water, 0.2 MGD of wastewater from the Steam Power Plant (SPP) and U-240 demineralizer regeneration processes and approximately 0.5 MGD of stormwater runoff from undeveloped areas of the refinery, main parking lot, salvage yard, some portion of I-80 and San Pablo Avenue. The cooling water portion of Waste 003 is taken from San Pablo Bay. Limited amounts of fresh water may be added to supplement the salt cooling water as a result of saltwater pump failure or maintenance work. Intermittent chlorination and dechlorination to

control the growth of marine organisms within the cooling system has not been used since 1991. Waste 003 is discharged at elevated temperature to San Pablo Bay via outfall E-003 (lat. 38°02′41″, long. 122°15′41″). The Discharger maintains groundwater recovery equipment and a system of sausage booms, oil blankets, floating and fixed weirs in the E-003 Outfall Area between Highway 40 and the E-003 outlet. The Discharger indicates that key elements of these systems are inspected, maintained, and/or replaced, as often as necessary, to ensure reliable groundwater recovery operations and adequate hydrocarbon sheen absorptive and barrier controls in order to prevent any release of hydrocarbons to San Pablo Bay. Table 2 below describes the quality of once-through cooling water based on self-monitoring data from 2001 through 2004.

Table 2: Summary of Pollutants in Once-Through Cooling Water at E-003

Parameter	Average[1]	Daily Maximum
pH, standard units	6.8 (minimum)	8.4
Temperature (°F)	60 (minimum)	108
Total Organic Carbon (mg/L, net increase)	-0.03	2.5
Total Organic Carbon (mg/L)	1.9	6.3
Arsenic (µg/L)	40	49
Cadmium (µg/L)	0.07	0.17
Chromium VI (µg/L)	ND	ND
Copper (µg/L)	15	48
Lead (µg/L)	0.7	1.4
Mercury (µg/L)	0.011	0.016
Nickel (µg/L)	20	41
Selenium (µg/L)	19	31
Silver (µg/L)	ND	ND
Zinc (µg/L)	67	80
Cyanide (µg/L)	ND	ND

[1] Nondetect (ND) values were replaced with ½ the detection limit. In cases where more than half the data are ND, the average indicated in Table 2 is ND.

d. **Waste 004** consists of stormwater that the Discharger does not route to the wastewater treatment facility. The ROWD indicates that the discharge at E-004 consists of sheet flow from the refinery's Marine Terminal and access road causeway, originates from about 172,000 square feet of impervious areas, and is characterized before discharge to San Pablo Bay. Additionally, the ROWD indicates that the Discharger has not treated, stored, or disposed of significant materials in a manner that would allow exposure to stormwater in areas that drain to E-004. The pH of uncontrolled stormwater discharges from the Marine Terminal is affected by low pH rainwater (acid rain). As a result, E-004 discharge pH values are at times depressed below the low limit of 6.5 (see Table 3). Table 3 below describes the quality of stormwater runoff based on self-monitoring data from 2001 through 2004.

Table 3: Summary of Pollutants in Stormwater at E-004

Parameter	Average	Daily Maximum
pH, standard units	6.2 (minimum)	7.8
Conductivity (µmhos/cm)	163	812
Total Suspended Solids (mg/L)	74	221

Parameter	Average	Daily Maximum
Total Organic Carbon (mg/L)	30	332
Oil and Grease (mg/L)	2.0	10.2

e. **Miscellaneous** discharges include intermittent or periodic activities involving a discharge of fresh water to San Pablo Bay. The total estimated discharges are 0.01 MGD. The activities are necessary to ensure the safety and reliability of specific operations at the Marine Terminal Complex (MTC) and the Saltwater Intake Structure (SWIS). The operations involving fresh water discharge include cleaning intake screens at the SWIS, fire monitor and hydrant testing at the MTC, washing salt and debris off a boom boat, condensate from steam traps from insulated lines at the MTC and algae removal from a concrete boat launch ramp.

6. ***Collection System***: The collection system transports all refinery wastewater, stormwater runoff, and sanitary wastewater to a stormwater splitter box (with the exception of wastewater from the lower tank farm). Wastewater from the stormwater splitter box and lower tank farm enters the dry and wet weather sumps (DWS & WWS) to be pumped to the stormwater equalization tanks (104, 105 & 130). If the DWS & WWS reach their total pumping capacity or the equalization tanks are full, the excess wastewater will overflow a weir to the primary storm basin (PSB). If the PSB reaches its capacity it will overflow a weir to the main storm basin (MSB). When wastewater flows return to normal, wastewaters in the PSB and/or MSB are drained back to the WWS and pumped to the equalization tanks. Gravity separation of oil and solids occurs in the equalization tanks with oils pumped to the oil recovery system. The collection system also receives internal wastewater recycle streams from primary, secondary, and tertiary WWTP units.

7. ***Wastewater Treatment Units:*** As shown in Figure 2, all refinery wastewater is normally routed to WWTP equalization tanks. From these tanks, process wastewater flows by gravity to the API Separator where most of the oil and solids separate from the wastewater by gravity. The separated oil is transferred to the oil recovery system, and solids are transferred to a collection tank. Wastewater from the API Separator flows to a flash-mixing chamber where the Discharger may add primary and secondary coagulants. After the mixing chamber, wastewater flows by gravity to the Dissolved Air Flotation (DAF) units where additional oil and solids are removed. The DAF units (four in total) treat wastewater through (a) chemical addition to flocculate wastewater, (b) adding air bubbles to cause flocculated wastewater to float to the surface for removal, and (c) using mechanical equipment to remove solids and floatable oil. The Discharger routes settled solids from the API and DAF units to the collection tank for transport to a delayed coking unit.

   From the DAF units, wastewater flows by gravity over a weir into the DAF effluent channel into a sump, and is pumped to the biotreater system, which is augmented by powered activated carbon treatment (PACT). In the biotreater/PACT system, which consists of two aeration tanks that contain air diffusers that are attached to tank floors, microorganisms and powered activated carbon oxidize wastewater. The microorganisms speed up the decomposition process by using oxygen and food to grow and reproduce.

   After the biotreater/PACT system, the Discharger routes wastewater to two clarifiers that operate in parallel to separate biological solids, carbon, and inert solids from the process wastewater. The biological solids and carbon settle to the bottom by gravity, and are recycled back to the biotreater/PACT system based on sludge age and the rate of incoming wastewater flows. The Discharger also routes a portion of the recycled solids to the wet air regeneration (WAR) system.

From the clarifiers, the Discharger normally routes wastewater to as many as eight granular media filters that operate independently, in parallel (as shown in Figure 2). In order to trap very fine particles, each filter contains a 10-inch layer of fine grain sand. Over time, enough particles will cause the filter media surface to become completely covered, which causes the liquid level to rise. Rising water levels triggers an air mix system that uses low-pressure air to hold the larger particles in suspension to allow continued filtering. If the filter media surface becomes clogged with smaller particles, this will trigger the pulse mix regeneration system. This uses treated effluent to force atmospheric air trapped in the underdrain of the filter cell up through the media. Once the filter cell has gone through a number of pulse mix cycles, a backwash cycle will be initiated. From the granular media filters, the Discharger routes treated effluent by gravity to a sump, from which it is pumped to a deep-water diffuser in San Pablo Bay.

Before or following media filtration, treated wastewater is chlorinated using sodium hypochlorite. Disinfection occurs as wastewater travels through the offshore diffuser line. Before the chlorinated effluent is discharged to the Bay, sufficient excess sodium bisulfite is added to chemically reduce the chlorine to chlorides.

8. ***Wet Air Regeneration (WAR) Unit:*** To control the concentrations of microorganisms and carbon particle levels in the biotreater/PACT system, the Discharger regenerates the spent carbon in a reactor that operates with excess oxygen at an elevated temperature and pressure. This oxidizes the biological material and sorbed organics and regenerates the carbon. The Discharger routes the regenerated carbon back to the PACT system for reuse. When the WAR unit is offline for maintenance work, solids may be wasted and disposed offsite at a permitted facility.

9. ***Selenium Removal Plant:*** The selenium plant treats different mixtures of sour water stripper bottoms with copper sulfate and polymers to precipitate selenium. The Discharger uses filter presses to dewater sludge that contains high levels of selenium before it is disposed of at a landfill. The supernatant liquid (sour water after selenium removal) is treated with copper precipitating agents and polymers under pH control to remove copper. After copper removal, the supernatant is treated with ferrous sulfide and polymer to further reduce copper concentrations. The precipitated copper solids from both these processes are dewatered with a filter press before disposal at a landfill. The treated supernatant is stored in a tank for sampling and analysis of copper and selenium from which it is either discharged to the process sewer system, or pumped to a tank for retreatment through the same process.

Regional Monitoring Program

10. On April 15, 1992, the Board adopted Resolution No. 92-043 directing the Executive Officer to implement the Regional Monitoring Program (RMP) for the San Francisco Bay. Subsequent to a public hearing and various meetings, Board staff requested major permit holders in this region, under authority of Section 13267 of California Water Code, to report on the water quality of the estuary. These permit holders, including the Discharger, responded to this request by participating in a collaborative effort, through the San Francisco Estuary Institute. This effort has come to be known as the San Francisco Bay Regional Monitoring Program for Trace Substances. The Discharger has agreed to continue to participate in the RMP, which involves collection of data on pollutants and toxicity in water, sediment and biota of the estuary. The Discharger's participation and support of the RMP is used in consideration of in the level of receiving water monitoring required by this Order.

Applicable Plans, Policies and Regulations

Basin Plan

11. On January 21, 2004, the Board adopted Resolution No. R2-2004-0003 amending the Basin Plan to (1) update the dissolved water quality objectives (WQOs) for metals to be identical to the CTR water quality criteria (WQC) except for cadmium; (2) to change the Basin Plan definitions of marine, estuarine and freshwater to be consistent with the CTR definitions; (3) to update NPDES implementation provisions to be consistent with *the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (the State Implementation Plan, or SIP); (4) to remove settleable matter effluent limitations for POTWs, and other editorial changes. State Water Resources Control Board (SWRCB) and the Office of Administrative Law (OAL) approved these amendments on July 22, 2004, and October 4, 2004, respectively. The USEPA gave final approval to the amendment on January 5, 2005.

Beneficial Uses

12. Beneficial uses for the San Pablo Bay receiving water, as identified in the Basin Plan and based on known uses of the receiving waters in the vicinity of the discharge, are:

    a. Industrial Service Supply
    b. Navigation
    c. Water Contact Recreation
    d. Non-contact Water Recreation
    e. Commercial and Sport Fishing
    f. Shellfish Harvesting
    g. Wildlife Habitat
    h. Preservation of Rare and Endangered Species
    i. Fish Migration
    j. Fish Spawning
    k. Estuarine Habitat

State Implementation Policy (SIP)

13. The SWRCB adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (also known as the State Implementation Policy or SIP) on March 2, 2000 and the Office of Administrative Law (OAL) approved the SIP on April 28, 2000. The SIP applies to discharges of toxic pollutants in the inland surface waters, enclosed bays and estuaries of California subject to regulation under the State's Porter-Cologne Water Quality Control Act (Division 7 of the Water Code) and the federal Clean Water Act. The SIP establishes implementation provisions for priority pollutant criteria promulgated by the USEPA through the National Toxics Rule (NTR) and California Toxics Rule (CTR), and for priority pollutant objectives established by the Regional Water Quality Control Boards in their water quality control plans (basin plans). The SIP also establishes monitoring requirements for 2,3,7,8-TCDD equivalents, chronic toxicity control provisions, and Pollutant Minimization Programs. The SIP applies to discharges 002 and 003. Discharge 004 is exempt from the SIP since it only consists of stormwater runoff.

California Toxics Rule (CTR)

14. On May 18, 2000, the USEPA published the *Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California* (Federal Register, Volume 65, Number 97, 18 May 2000). These standards are generally referred to as the CTR. The CTR specified water quality criteria (WQC) for numerous pollutants, of which some are applicable to the Discharger's effluent discharges.

Other Regulatory Bases

15. WQOs/WQC and effluent limitations in this permit are based on the SIP; the Board's Basin Plan; California Toxics Rule (Federal Register Volume 65, 97); *Quality Criteria for Water* (USEPA 440/5-86-001, 1986 and subsequent amendments, "USEPA Gold Book"); applicable Federal Regulations (40 CFR Parts 122 and 131); the National Toxics Rule (57 FR 60848, 22 December 1992 and 40 CFR Part 131.36(b), "NTR"); NTR Amendment (Federal Register Volume 60, Number 86, 4 May 1995, pages 22229-22237); USEPA December 10, 1998 "National Recommended Water Quality Criteria" compilation (Federal Register Vol. 63, No. 237, pp. 68354-68364); "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California" (Thermal Plan); and Best Professional Judgment (BPJ) as defined in the Basin Plan. Where numeric effluent limitations have not been established or updated in the Basin Plan, 40 CFR 122.44(d) specifies that water quality based effluent limitations (WQBELs) may be set based on USEPA criteria and supplemented where necessary by other relevant information to attain and maintain narrative WQC to fully protect designated beneficial uses. Discussion of the specific bases and rationale for effluent limits are given in the associated Fact Sheet for this Permit, which is incorporated as part of this Order.

    a) On March 30, 2000, USEPA revised its regulation that specifies when new and revised State and Tribal water quality standards (WQS) become effective for Clean Water Act (CWA) purposes (40 CFR 131.21, 65 FR 24641, April 27, 2000). Under USEPA's new regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000, may be used for CWA purposes, whether or not approved by USEPA.

    b) This Order contains restrictions on individual pollutants that are no more stringent than required by the federal Clean Water Act. Individual pollutant restrictions consist of technology-based restrictions and water quality-based effluent limitations. The technology-based effluent limitations consist of restrictions on BOD_5, TSS, COD, oil and grease, phenolic compounds, ammonia, sulfide, total chromium, hexavalent chromium, and pH. Restrictions on these pollutants are specified in federal regulations as discussed in Findings 21, and the permit's technology-based pollutant restrictions are no more stringent than required by the Clean Water Act. Water quality-based effluent limitations have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant water quality-based effluent limitations were derived from the California Toxics Rule, the California Toxics Rule is the applicable standard pursuant to 40 C.F.R. 131.38. The scientific procedures for calculating the individual water quality-based effluent limitations are based on the CTR-SIP, which was approved by USEPA on May 1, 2001, or Basin Plan Provisions approved by USEPA on May 29, 2000. Most beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the [Clean Water] Act" pursuant to 40 C.F.R. 131.21(c)(1). The remaining water quality objectives and beneficial uses implemented by this Order (specifically [arsenic, chromium, copper (freshwater only), lead, nickel, silver, and zinc]) were approved by USEPA on January 5, 2005, and are applicable water quality standards pursuant to 40 C.F.R. 131.21(c)(2). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the technology-based

requirements of the Clean Water Act and the applicable water quality standards for purposes of the Clean Water Act.

16. In addition to the documents listed above, other USEPA guidance documents upon which BPJ was developed may include in part:
    - Region 9 Guidance For NPDES Permit Issuance, February 1994;
    - USEPA Technical Support Document for Water Quality Based Toxics Control (March 1991) (TSD);
    - Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria, October 1, 1993;
    - Whole Effluent Toxicity (WET) Control Policy, July 1994;
    - National Policy Regarding Whole Effluent Toxicity Enforcement, August 14, 1995;
    - Clarifications Regarding Flexibility in 40 CFR Part 136 Whole Effluent Toxicity (WET) Test Methods, April 10, 1996;
    - Regions 9 & 10 Guidance for Implementing Whole Effluent Toxicity Programs Final, May 31, 1996;
    - Draft Whole Effluent Toxicity (WET) Implementation Strategy, February 19, 1997.

Basis for Effluent Limitations

General Basis

17. *Federal Water Pollution Control Act.* Effluent limitations and toxic effluent standards are established pursuant to sections 301 through 305, and 307 of the Federal Water Pollution Control Act and amendments thereto are applicable to the discharges herein.

Applicable Water Quality Objectives/Criteria

18. The WQO and WQC applicable to the receiving waters for this discharge are from the Basin Plan, the CTR, and the NTR.

    a. The Basin Plan includes numeric objectives for mercury and cadmium, and narrative WQOs for toxicity and bioaccumulation in order to protect beneficial uses. The narrative toxicity objective states in part, "[a]ll waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms." The bioaccumulation objective states in part, "[c]ontrollable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life. Effects on aquatic organisms, wildlife, and human health will be considered." Effluent limitations and provisions contained in this Order are designed to implement these objectives, based on available information.

    b. The CTR specifies numeric aquatic life criteria for 23 priority toxic pollutants and numeric human health criteria for 57 priority toxic pollutants. These criteria apply to inland surface waters and enclosed bays and estuaries such as here, except that where the Basin Plan's Tables 3-3 and 3-4 specify numeric objectives for certain of these priority toxic pollutants, the Basin Plan's numeric objectives apply over the CTR (except in the South Bay south of the Dumbarton Bridge).

    c. The NTR established numeric aquatic life criteria for selenium, numeric aquatic life and human health criteria for cyanide, and numeric human health criteria for 34 toxic organic pollutants for waters of San Francisco Bay upstream to and including Suisun Bay and the Sacramento-San Joaquin Delta. This includes the receiving waters for this Discharger.

19. ***Basin Plan Receiving Water Salinity Definitions.*** The Basin Plan states that the salinity characteristics (i.e., freshwater vs. saltwater) of the receiving water shall be considered in determining the applicable WQC. Freshwater criteria shall apply to discharges to waters with salinities equal to or less than one ppt at least 95 percent of the time. Saltwater criteria shall apply to discharges to waters with salinities equal to or greater than 10 ppt at least 95 percent of the time in a normal water year. For discharges to water with salinities in between these two categories, or tidally influenced freshwaters that support estuarine beneficial uses, the criteria shall be the lower of the salt or freshwater criteria (the latter calculated based on ambient hardness), for each substance.

Receiving Water Salinity and Hardness

20. a. Salinity. The receiving water for the subject discharge is San Pablo Bay, which is a tidally influenced waterbody, with significant fresh water inflows during the wet weather season. San Pablo Bay is specifically defined as estuarine under the Basin Plan salinity definition. Therefore, the effluent limitations specified in this Order for discharges to San Pablo Bay are based on the lower of the marine and freshwater Basin Plan WQOs and CTR and NTR WQC.

b. Hardness. Some WQOs and WQC are hardness dependent. Hardness data collected through the RMP are available for water bodies in the San Francisco Bay Region. In determining the WQOs and WQC for this Order, the Board used a hardness of 48 mg/L, which is the minimum hardness at the Davis Point Station observed from 1993-2001. This represents the best available information for hardness of the receiving water after it has mixed with the discharge.

Technology-Based Effluent Limits

21. The refinery is classified as a "cracking refinery" as defined by the USEPA in 40 CFR § 419.20. Therefore, the USEPA Effluent Guidelines and Standards for Petroleum Refining Point Sources (40 CFR § 419 Subpart B) based on Best Available Technology Economically Achievable (BAT), Best Practicable Control Technology (BPT), and/or Best Conventional Pollutant Control technology (BCT), whichever are more stringent, are applicable to the discharge. The application of these guidelines and standards is based on production rates at the refinery. The effluent limitations in this Permit are based on the maximum facility production rates from 1999-2003. Production rates during this period have generally been very consistent not varying by more than 10 percent. A detailed description of the methodology and data used to calculate the technology-based effluent limitations is included in Attachment A to the Fact Sheet.

Ultra Low Sulfur Diesel Project

22. The Discharger has completed construction of the ultra low sulfur diesel (ULSD) project. The purpose of the ULSD project is to address new USEPA regulations on the amount of sulfur content present in diesel fuel. In this case, the Discharger has installed a new sour water stripper to treat the additional wastewater associated with this project. The increase in production capacity is expected to be about 0.2 percent. This increase does not meet the definition of a new source as defined in the Code of Federal Regulations (40 CFR 122.29). Specifically, a new source must (a) be constructed at a site where no other source is located, (b) completely replace process or production equipment that cause the discharge of pollutants from an existing source; or (c) have processes that are substantially independent of the site's existing source. This Order specifies production based effluent limits for current throughput rates and for the planned increase.

23. To ensure that the increase in flow or pollutant loadings associated with the ultra low sulfur diesel project is consistent with Resolution No. 68-16 (*Statement of Policy with Respect to Maintaining High Quality of Waters in California*), the Discharger put together a report that found ultra low sulfur diesel project will not increase effluent concentrations or loading of most pollutants. To address

concerns with potential increases in selenium and mercury, the Discharger agreed to conduct studies on each of these pollutants. Board staff approved the study proposals for selenium and mercury on August 22, 2003, and April 13, 2004, respectively. The results of these studies, and any subsequent actions identified in these studies, will ultimately satisfy any antidegradation concerns. The mercury and selenium studies are a requirement of the Discharger's Land Use Permit with Contra Costa County.

Water Quality-Based Effluent Limitations

24. Toxic substances in outfalls 002 and 003 are regulated by WQBELs derived from water quality objectives listed in the Basin Plan Tables 3-3 and 3-4, the NTR, USEPA recommended criteria, the CTR, the SIP, and/or BPJ. WQBELs in this Order are revised and updated from the limits in the previous permit order and their presence in this Order is based on evaluation of the Discharger's data as described below under Reasonable Potential Analysis (RPA). Numeric WQBELs are required for all constituents that have reasonable potential to cause or contribute to an excursion above any State WQO/WQC. Reasonable potential is determined and final WQBELs are developed using the methodology outlined in the SIP. If the Discharger demonstrates that the final limits will be infeasible to meet and provides justification for a compliance schedule, then interim limits are established, with a compliance schedule to achieve the final limits. Further details about the effluent limitations are given in the associated Fact Sheet.

Receiving Water Ambient Background Data used in Calculating WQBELs

25. The receiving waters for the discharges are estuarine and subject to complex tidal and riverine currents. Therefore, the most representative location of ambient background data for this facility is the Central Bay. WQBELs were calculated using RMP data from 1993 through 2001 for the Yerba Buena Island RMP station. However, not all the constituents listed in the CTR were analyzed by the RMP during this time. By letter dated August 6, 2001, the Board's Executive Officer addressed this data gap by requiring the Discharger to conduct additional monitoring pursuant to section 13267 of the California Water Code.

Constituents Identified in the 303(d) List

26. On May 12, 1999, the USEPA approved a revised list of impaired waterbodies prepared by the State. The list (hereinafter referred to as the 303(d) list) was prepared in accordance with Section 303(d) of the federal Clean Water Act to identify specific water bodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations on point sources. San Pablo Bay is listed as an impaired waterbody. The pollutants impairing San Pablo Bay include mercury, nickel, selenium, PCBs total, dioxins and furans, chlordane, DDT, dieldrin, diazinon, and dioxin-like PCBs. San Pablo Bay is also impaired by exotic species.

Dilution and Assimilative Capacity

27. In response to the SWRCB's Order No. 2001-06, Board staff has evaluated the assimilative capacity of the receiving water for 303(d) listed pollutants for which the Discharger has reasonable potential in its discharges. The evaluation included a review of RMP data (local and Central Bay stations), effluent data, and WQOs/WQC. From this evaluation, it is determined that the assimilative capacity is highly variable due to the complex hydrology of the receiving water. Therefore, there is uncertainty associated with the representative nature of the appropriate ambient background data to conclusively quantify the assimilative capacity of the receiving water. Pursuant to Section 1.4.2.1 of the SIP, "dilution credit may be limited or denied on a pollutant-by-pollutant basis..."

    a. For certain bioaccumulative pollutants, based on BPJ, dilution credit is not included in calculating the final WQBELs. This determination is based on available data on concentrations of these

pollutants in aquatic organisms, sediment, and the water column. The Board placed selenium, mercury, and PCBs on the CWA Section 303(d) list. The USEPA added dioxins and furans compounds, chlordane, dieldrin, and 4,4'-DDT on the CWA Section 303(d) list. Dilution credit is not included for the following pollutants: mercury, selenium, polynuclear aromatic hydrocarbons (PAHs), PCBs, dieldrin, 4,4-DDE, and dioxins and furans. The following factors suggest that there is no more assimilative capacity in the Bay for these pollutants.

i. San Francisco Bay fish tissue data shows that these pollutants, except for selenium and PAHs, exceed screening levels. The fish tissue data are contained in "Contaminant Concentrations in Fish from San Francisco Bay 1997" May 1997. Denial of dilution credits for these pollutants is further justified by fish advisories to the San Francisco Bay. The Office of Environmental Health and Hazard Assessment (OEHHA) performed a preliminary review of the data from the 1994 San Francisco Bay pilot study, "Contaminated Levels in Fish Tissue from San Francisco Bay." The results of the study showed elevated levels of chemical contaminants in the fish tissues. Based on these results, OEHHA issued an interim consumption advisory covering certain fish species from the bay in December 1994. This interim consumption advice was issued and is still in effect due to health concerns based on exposure to sport fish from the bay contaminated with mercury, PCBs, dioxins, and pesticides (e.g., DDT).

ii. For selenium, the denial of dilution credits is based on Bay waterfowl tissue data presented in the California Department of Fish and Game's Selenium Verification Study (1986-1990). These data show elevated levels of selenium in the livers of waterfowl that feed on bottom dwelling organisms such as clams. Additionally, in 1987 the Office of Environmental Health Hazard Assessment issued an advisory for the consumption of two species of diving ducks in the north bay found to have high tissue levels of selenium. This advisory is still in effect.

iii. For PAHs, the denial of dilution credits is based on recent evidence that suggests high molecular PAHs are bioaccumulative with impairing status under further review. The Board staff report entitled *Proposed Revisions to Section 303(d) List and Priorities for Development of Total Maximum Daily Loads*, dated December 19, 2001, states:

> "PAHs are known carcinogens that accumulate in shellfish tissue, but do not accumulate in fish tissue. The weight of evidence from the Regional Monitoring Program (RMP) indicates that although water quality criteria are almost never exceeded at RMP stations (between 0 and 1% of RMP water samples individual PAHs exceeded the EPA and CRT criterion) there is evidence that PAHS may be accumulating at higher levels over time (Hoenicke, Hardin, et al., in prep.; Thompson et al., 1999)."

The Board staff Report *Proposed Revisions to Section 303(d) List and Priorities for Development of Total Maximum Daily Loads* also states:

> "PAH water quality objectives from the California Toxics Rule (CTR) are human health-based and are therefore incomplete with respect to potential impacts to aquatic life described above. PAHs are elevated in sediments of about half the toxic hotspot sites identified in the Bay Protection Program exhibiting a correlative (not causative) but potentially synergistic effect on aquatic life along with other chemicals, as evidenced by sediment toxicity tests and degraded benthic communities (BPTCP, 1998). Occasional exceedances of the human health criteria in ambient samples, evidence of increasing shellfish concentrations, and preponderance of PAHs at toxic sites warrant increased assessment activities for PAHs by dischargers and cities around the region."

b. Furthermore, Section 2.1.1 of the SIP states that for bioaccumulative compounds on the 303(d) list, the Board should consider whether mass-loading limits should be limited to current levels. The Board finds that mass loading limits are warranted for certain bioaccumulative compounds on the 303(d) list for the receiving waters of this Discharger. This is to ensure that this Discharger does not contribute further to impairment of the narrative objective for bioaccumulation.

c. As mentioned in an earlier finding, the discharge of Waste 002 is through a deepwater diffuser to San Pablo Bay. Based on a study entitled *Field Dye Tracer Studies and Initial Dilution Modeling of the Process Wastewater Effluent from the UNOCAL San Francisco Refinery Diffuser NPDES Permit No. CA0005053*, dated December 1989, and prepared by Entrix, Inc., the Discharger indicates that the diffuser achieves a probable minimum initial dilution of 67:1. To address uncertainties with mixing (discussed below) and to protect beneficial uses of the Bay, this Order limits the dilution credit for Waste 002 for nonbioaccumulative constituents to 10:1. Limiting the dilution credit is based on SIP provisions in Section 1.4.2. The following outlines the basis for limiting the dilution credit.

i. A far-field background station is appropriate because the receiving waterbody (Bay) is a very complex estuarine system with highly variable and seasonal upstream freshwater inflows and diurnal tidal saltwater inputs.

ii. Due to the complex hydrology of the San Francisco Bay, a mixing zone cannot be accurately established.

iii. Previous dilution studies do not fully account for the cumulative effects of other wastewater discharges to the system.

iv. The SIP allows limiting a mixing zone and dilution credit for persistent pollutants (e.g., copper, silver, nickel and lead).

The main justification for limiting dilution credit is uncertainty in accurately determining ambient background and uncertainty in accurately determining the mixing zone in a complex estuarine system with multiple wastewater discharges. The basis for using 10:1 is that it was granted in the previous permit. This 10:1 limit is also based on the Basin Plan's prohibition number 1, which prohibits discharges like Waste 002 with less than 10:1. Since the discharge of Waste 002 is required to achieve at least 10:1, it is appropriate to grant 10:1 at this time. The detailed rationale is described in the Fact Sheet.

Total Maximum Daily Loads (TMDLs) and Waste Load Allocations (WLAs)

28. Based on the 303(d) list of pollutants impairing San Pablo Bay, the Board plans to adopt TMDLs for these pollutants no later than 2010, with the exception of dioxin and furan compounds. For dioxins and furans, the Board intends to consider this matter further after the USEPA completes its national health reassessment. Future reviews of the 303(d) list for San Pablo Bay may result in revision of the proposed schedules, provide schedules for other pollutants, or both.

29. The TMDLs will establish WLAs and load allocations for point sources and non-point sources, respectively, and will result in achieving the water quality standards for the waterbody. The final effluent limitations for this Discharger will be based on WLAs that are derived from the TMDLs.

30. *Compliance Schedules.* Pursuant to Section 2.1.1 of the SIP, "the compliance schedule provisions for the development and adoption of a TMDL only apply when: (a) the Discharger requests and

demonstrates that it is infeasible for the Discharger to achieve immediate compliance with a CTR criterion; and (b) the Discharger has made appropriate commitments to support and expedite the development of the TMDL. In determining appropriate commitments, the RWQCB should consider the Discharger's contribution to current loadings and the Discharger's ability to participate in TMDL development." As further described in a later finding under the heading **Interim Limits and Compliance Schedules**, the Discharger by letter dated January 7, 2005, demonstrated that it is infeasible to achieve compliance for certain pollutants.

31. The following summarizes the Board's strategy to collect water quality data and to develop TMDLs:
    a. Data collection – The Board has given the dischargers the option to collectively assist in developing and implementing analytical techniques capable of detecting 303(d)-listed pollutants to at least their respective levels of concern or WQOs/WQC. The Board will require dischargers to characterize the pollutant loads from their facilities into the water-quality limited waterbodies. The results will be used in the development of TMDLs, but may also be used to update/revise the 303(d) list and/or change the WQOs/WQC for the impaired waterbodies including Carquinez Strait and Suisun Bay.

    b. Funding mechanism – The Board has received, and anticipates continued receipt of, resources from federal and state agencies for the development of TMDLs. To ensure timely development of TMDLs, the Board intends to supplement these resources by allocating development costs among dischargers through Water Quality Attainment Strategies (referenced in a previous finding) or other appropriate funding mechanisms.

Interim Limits and Compliance Schedules

32. Until final WQBELs or WLAs are adopted, state and federal antibacksliding and antidegradation policies, and the SIP, require that the Board include interim effluent limitations. The interim effluent limitations will be the lower of the following:
    - current performance; or
    - previous order's limits

    This permit establishes interim performance–based limits in addition to interim concentration limits to limit the discharge of certain 303(d)-listed bioaccumulative pollutants' mass loads to their current levels. These interim performance-based mass limits are based on recent discharge data. Where pollutants have existing high detection limits, interim mass limits are not established because meaningful performance-based mass limits cannot be calculated for pollutants with non-detectable concentrations. However, the Discharger has the option to investigate alternative analytical procedures that result in lower detection limits, either through participation in new RMP special studies or through equivalent studies conducted jointly with other dischargers.

33. Compliance schedules are established based on Section 2.2 of the SIP for limits derived from CTR WQC or based on the Basin Plan for limits derived from the Basin Plan WQOs. If an existing Discharger cannot immediately comply with a new and more stringent effluent limitation, the SIP and the Basin Plan authorize a compliance schedule in the permit. To qualify for a compliance schedule, both the SIP and the Basin Plan require that the Discharger demonstrate that it is infeasible to achieve immediate compliance with the new limit. The SIP and Basin Plan require that the following information be submitted to the Board to support a finding of infeasibility:
    i. documentation that diligent efforts have been made to quantify pollutant levels in the discharge and sources of the pollutant in the waste stream, including the results of those efforts;
    ii. documentation of source control and/or pollution minimization efforts currently under way or completed;

iii. a proposed schedule for additional or future source control measures, pollutant minimization or waste treatment; and
iv. a demonstration that the proposed schedule is as short as practicable.

34. ***Infeasibility to Comply Reports for E-002:*** The Discharger submitted infeasibility to comply reports for E-002, dated January 7, 2005, for copper, cyanide, 4,4-DDE, dieldrin, dioxin (TCDD Equivalents), lead, mercury, and selenium. Board staff performed a statistical analysis to determine if it is infeasible for the Discharger to comply with final WQBELs for copper, cyanide, 4,4-DDE, dieldrin, dioxin (TCDD Equivalents), mercury, selenium, and lead. Based on this analysis, the Board confirms the Discharger's assertion of infeasibility except for lead. The Fact Sheet contains the details of this analysis.

35. The demonstration of infeasibility for copper, cyanide, 4,4-DDE, dieldrin, dioxin (TCDD Equivalents), mercury, and selenium complies with the infeasibility requirements in Section 2.1 of the SIP. This Order establishes compliance schedules for these pollutants that extend beyond 1 year. Pursuant to the SIP, and 40 CFR 122.47, the Board shall establish interim numeric limitations and interim requirements to control the pollutants. This Order establishes interim limits for these pollutants based on the previous permit limits or existing plant performance, whichever is more stringent. Specific basis for these interim limits are described in the following findings for each pollutant.

36. ***Infeasibility to Comply Reports for E-003:*** The Discharger submitted infeasibility to comply reports for E-003 (once-through cooling water), dated January 7, 2005, for arsenic, selenium, lead, dioxin (TCDD Equivalents), copper, nickel, zinc, 4,4-DDE, and dieldrin. In preparing infeasibility to comply reports, the Discharger grouped the pollutants into three categories: (a) those not associated with once-through non-contact system metallurgy (i.e., arsenic, lead, selenium, and dioxin), (b) those associated with once-through non-contact system metallurgy (copper, nickel, and zinc), and (c) pollutants (4,4-DDE and Dieldrin) that are below the analytical detection limit, which makes it impossible to document compliance with final WQBELs. For all pollutants that triggered reasonable potential at the E-003 discharge (with the exception of zinc), the Discharger reports that these pollutants are also found at levels above the criteria at the intake (I-001). For this reason, the Discharger explains that it cannot identify and implement actions to achieve compliance at E-003 for these pollutants.

Antidegradation and Antibacksliding

37. The limitations in this Order comply with the prohibition contained in Clean Water Act Section 402(o) against establishment of less stringent WQBELs (antibacksliding) because:

a) For impairing pollutants, the revised final limitations will be consistent with TMDLs and WLAs, once they are established;

b) For non-impairing pollutants, the final limitations are or will be consistent with current State WQOs/WQCs;

c) Antibacksliding does not apply to interim limitations established under previous Orders;

d) If antibacksliding policies apply to interim limitations under 402(o)(2)(c), a less stringent limitation is necessary because of events over which the Discharger has no control, and for which there is no reasonable available remedy; or

e) If new information is available that was not available during previous permit issuance.

The interim performance based limits (IPBLs) in this Order comply with antidegradation requirements and meet the requirements of the SIP because they hold the Discharger to performance levels that will not cause or contribute to water quality impairment or further water quality degradation. The pollutant-specific discussions below and in the attached Fact Sheet contain more detailed discussions of antidegradation and antibacksliding, where appropriate.

Specific Basis

Reasonable Potential Analysis

38. As specified in 40 CFR 122.44(d) (1) (i), permits are required to include WQBELs for all pollutants "which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard." Using the method prescribed in Section 1.3 of the SIP, Board staff has analyzed the effluent data to determine if discharges from outfalls 002 and 003 have a reasonable potential to cause or contribute to an excursion above a State water quality standard ("Reasonable Potential Analysis" or "RPA"). For all parameters that have reasonable potential, numeric WQBELs are required. The RPA compares the effluent data with numeric and narrative WQOs in the Basin Plan and numeric WQC from the NTR, and the CTR.

39. *RPA Methodology.* The method for determining RPA involves identifying the observed maximum pollutant concentration in the effluent (MEC) for each constituent, based on effluent concentration data. The RPA for all constituents is based on zero dilution, according to section 1.3 of the SIP. There are three triggers in determining reasonable potential.

    a. The first trigger is activated when the MEC is greater than or equal to the lowest applicable WQO/WQC, which has been adjusted for pH, hardness (for freshwater WQO/WQC only), and translator data, if appropriate. If the MEC is greater than the adjusted WQO/WQC, then that pollutant has Reasonable Potential and a WQBEL is required.

    b. The second trigger is activated if the observed maximum ambient background concentration (B) is greater than the adjusted WQO/WQC (B>WQO/WQC):

        i. The MEC is less than the adjusted WQO/WQC (MEC < WQO/WQC), or

        ii. The pollutant was not detected in any of the effluent samples, and all the detection levels are greater than or equal to the adjusted WQO/WQC.

    c. The third trigger is activated after a review of other information determines that a WQBEL is required even though both MEC and B are less than the WQO/WQC, or effluent and background data are unavailable or insufficient (e.g., all nondetects). A limit is only required under certain circumstances to protect beneficial uses.

40. *RPA Determinations:* The MECs, WQOs/WQC, bases for the WQOs/WQC, background concentrations used, and Reasonable Potential conclusions from the RPA are listed in Tables 4 and 5 for all constituents analyzed. The RPA results for some of the constituents in the CTR were not determined because of the lack of objectives/criteria or effluent data. Further details on the RPA can be found in the Fact Sheet.

41. *Summary of RPA Data and Results.* The RPA was based on effluent monitoring data from January 2001 through August 2004. Based on the RPA methodology described above and in the SIP, the following constituents have been found to have reasonable potential to cause or contribute to an

excursion above WQOs/WQC: E-002-copper, lead, mercury, nickel, selenium, cyanide, 2,3,7,8 – TCDD- TEQ, chlorodibromomethane, dichlorobromomethane, 4,4'-DDE, dieldrin; and PCBs. E-003–arsenic, copper, lead, nickel, selenium, zinc, 2,3,7,8 TCDD-TEQ, 4,4' DDE, and dieldrin. Based on the RPA, numeric WQBELs are required to be included in the permit for these constituents.

42. *RPA Determinations*. The maximum effluent concentrations (MEC), WQOs, bases for the WQOs, background concentrations used and reasonable potential conclusions from the RPA are listed in the following tables for E-002 and E-003.

Table 4: E-002-Summary of Reasonable Potential Analysis Results

CTR #	Constituent[1]	WQO/ WQC (µg/L)	Basis[2]	MEC outfall 002 (µg/L)	Maximum Ambient Background Conc. (µg/L)	RP (Trigger Type)[4]
2	Arsenic	36	BP, sw	9.1	2.46	No
4	Cadmium	1.34	BP, fw	0.4	0.1268	No
5b	Chromium(VI)	11	BP, fw	1.6	4.4	No
6	Copper	3.7	CTR, sw, T=0.83[3]	20	2.45	Yes (1)
7	Lead	1.2	BP, fw	3.1	0.8	Yes (1)
8	Mercury*	0.025	BP, fw	0.518	0.0086	Yes (1)
9	Nickel*	7.1	BP, sw	13	3.7	Yes (1)
10	Selenium*	5.0	NTR, fw	49	0.39	Yes (1)
11	Silver	1.1	BP, fw	0.3	0.0683	No
12	Thallium	6.3	CTR, hh	0.3	0.21	No
13	Zinc	62	BP, fw	34	4.4	No
14	Cyanide	1	NTR, sw	9	<0.4	Yes (1)
16	Dioxin TEQ*	$1.4x10^{-8}$	BP, nar	$1.3*10^{-9}$	$7.1*10^{-8}$	Yes (2)(3)
19	Benzene	71	CTR, hh	<0.3	<0.05	No
23	Chlorodibromomethane	34	CTR, hh	43	<0.05	Yes (1)
27	Dichlorobromomethane	46	CTR, hh	60	<0.05	Yes (1)
60	Benzo(a)Anthracene	0.049	CTR, hh	<0.09	0.0053	UD
61	Benzo(a)Pyrene	0.049	CTR, hh	<0.09	0.00029	UD
62	Benzo(b)Fluoranthene	0.049	CTR, hh	<0.06	0.0046	UD
64	Benzo(k)Fluoranthene	0.049	CTR, hh	<0.05	0.0015	UD
73	Chrysene	0.049	CTR, hh	<0.1	0.0024	UD
74	Dibenzo(a,h)Anthracene	0.049	CTR, hh	<0.04	0.00064	No
88	Hexachlorobenzene	0.00077	CTR, hh	<0.4	0.0000202	UD
92	Indeno(1,2,3-cd)Pyrene	0.049	CTR, hh	<0.02	0.004	No
102	Aldrin	0.00014	CTR, hh	<0.003	Not available	UD
103	Alpha-BHC	0.013	CTR, hh	<0.002	0.000496	No
107	Chlordane	0.00059	CTR, hh	<0.005	0.00018	UD
108	4,4-DDT	0.00059	CTR, hh	<0.002	0.000066	UD
109	4,4-DDE*	0.00059	CTR, hh	<0.002	0.000693	Yes (2)
111	Dieldrin*	0.00014	CTR, hh	<0.002	0.000264	Yes (2)
112	Alpha-Endosulfan	0.0087	CTR, sw	<0.002	0.000069	No
113	Beta-Endosulfan	0.0087	CTR, sw	<0.002	0.0000819	No

CTR #	Constituent[1]	WQO/ WQC (µg/L)	Basis[2]	MEC outfall 002 (µg/L)	Maximum Ambient Background Conc. (µg/L)	RP (Trigger Type)[4]
115	Endrin	0.0023	CTR, sw	<0.002	0.000036	No
117	Heptachlor	0.00021	CTR, hh	<0.003	0.000019	UD
118	Heptachlor Expoxide	0.00011	CTR, hh	<0.002	0.000094	UD
119-25	PCBs (Sum)*	0.00017	CTR, hh	0.000375	Not available	Yes
126	Toxaphene	0.0002	CTR, sw	<0.2	Not available	UD
	CTR #s 1, 3, 5a, 15, 17-126 except, 19, 23, 27, 60-62, 64, 73, 74, 88, 92, 102, 103, 107-109, 111-113, 115, and 117-126	Various or NA	CTR	Non-detect, less than WQC, or no WQC	Less than WQC or Not Available	No or Undetermined[5]

1. * = Constituents on 303(d) list, applies WHO 1998 to Toxicity Equivalent Factors (TEQ) of 2,3,7,8-TCDD.
2. RPA based on the following: Hardness (H) is based on the lowest ambient hardness, 48 in mg/L as $CaCO_3$; BP = Basin Plan; CTR = California Toxics Rule; NTR=National Toxics Rule; fw = freshwater; sw = saltwater; nar = narrative, T = translator to convert dissolved to total copper.
3. Translators are based on the CTR.
4. See Finding 39 above for the definition of the three RPA triggers.
5. Undetermined due to lack of objectives/criteria, and/or lack of effluent data (See Fact Sheet Table for full RPA results).

Table 5: E-003-Summary of Reasonable Potential Analysis Results

CTR #	Constituent[1]	WQO/ WQC (µg/L)	Basis[2]	MEC outfall 003 (µg/L)	Maximum Ambient Background Conc. (µg/L)	RP (Trigger Type)[4]
2	Arsenic	36	BP, sw	49	2.46	Yes
4	Cadmium	1.34	BP, fw	<0.06	0.1268	No
5b	Chromium(VI)	11	BP, fw	<3.5	4.4	No
6	Copper*	3.7	CTR, sw, T=0.83[3]	51	2.45	Yes (1)
7	Lead	1.2	BP, fw	1.4	0.8	Yes (1)
8	Mercury*	0.025	BP, fw	0.016	0.0086	No
9	Nickel*	7.1	BP, sw	41	3.7	Yes (1)
10	Selenium*	5.0	NTR, fw	31	0.39	Yes (1)
11	Silver	1.1	BP, fw	<0.02	0.0683	No
12	Thallium	6.3	CTR, hh	<0.03	0.21	No
13	Zinc	62	BP, fw	80	4.4	Yes
14	Cyanide	1	NTR, sw	<10	<0.4	No
16	Dioxin TEQ*	$1.4x10^{-8}$	BP, nar	$5.86*10^{-8}$	$7.1*10^{-8}$	Yes (1)
109	4,4-DDE*	0.00059	CTR, hh	<0.002	0.000693	Yes (2)
111	Dieldrin*	0.00014	CTR, hh	<0.002	0.000264	Yes (2)
	CTR #s 1, 3, 5a, 15, 17-	Various	CTR	Non-detect,	Less than WQC	No or

CTR #	Constituent[1]	WQO/ WQC (µg/L)	Basis[2]	MEC outfall 003 (µg/L)	Maximum Ambient Background Conc. (µg/L)	RP (Trigger Type)[4]
	126 except, 109, and 111	or NA		less than WQC, or no WQC	or Not Available	Undetermined[5]

1. * = Constituents on 303(d) list, applies WHO 1998 to Toxicity Equivalent Factors (TEQ) of 2,3,7,8-TCDD.
2 RPA based on the following: Hardness (H) is based on the lowest ambient hardness, 48 in mg/L as $CaCO_3$; BP = Basin Plan; CTR = California Toxics Rule; NTR=National Toxics Rule; fw = freshwater; sw = saltwater; nar = narrative, T = translator to convert dissolved to total copper.
3 Translators are based on the CTR.
4 See Finding 39 above for the definition of the three RPA triggers.
5 Undetermined due to lack of objectives/criteria, and/or lack of effluent data (See Fact Sheet Table for full RPA results).

43. *RPA Results for Impairing Pollutants.* While TMDLs and WLAs are being developed, effluent concentration limits are established in this permit for 303(d) listed pollutants that have reasonable potential to cause or contribute to an excursion above the water quality standard. In addition, mass limits are required for bioaccumulative 303(d) –listed pollutants that can be reliably detected. Constituents on the 303(d) list for which the RPA determined a need for effluent limitations are nickel, mercury, selenium, 4,4'-DDE, Dieldrin, PCBs, and dioxin TEQ.

Interim Limits with Compliance Schedules

44. The Discharger has demonstrated infeasibility to meet the WQBELs calculated according to Section 1.4 of the SIP at E-002 for copper, cyanide, mercury, selenium, 4,4-DDE, dieldrin, and dioxin (TCDD Equivalents), and at E-003 for arsenic, selenium, lead, dioxin (TCDD Equivalents), copper, nickel, zinc, 4,4-DDE, and dieldrin. For E-002, this Order establishes compliance schedules for these pollutants. For limits based on CTR or NTR criteria (e.g., copper and selenium), this Order establishes a 5-year compliance schedule as allowed by the CTR and SIP. For limits based on the Basin Plan numeric WQOs (e.g., mercury, and nickel), this Order establishes compliance schedules until April 27, 2010. For limits based on Basin Plan narrative WQOs (e.g., dioxin TEQ), this Order established a compliance schedule until ten years from the effective date of this Order. On E-003, this Order does not establish compliance schedules since final limits will be based on intake credits.

Specific Pollutants

45. *Dioxin TEQ.*
(1) The CTR establishes a numeric human health WQC of 0.014 picograms per liter (pg/l) for 2,3,7,8-tetrachlorinated dibenzo-p-dioxin (2,3,7,8-TCDD) based on consumption of aquatic organisms. The preamble of the CTR states that California NPDES permits should use toxicity equivalents (TEQs) where dioxin-like compounds have reasonable potential with respect to narrative criteria. The preamble further states that USEPA intends to use the 1998 World Health Organization Toxicity Equivalence Factor (TEF)[1] scheme in the future and encourages California to use this scheme in State programs. Additionally, the CTR preamble states USEPA's intent to

[1] The 1998 WHO scheme includes TEFs for dioxin-like PCBs. Since dioxin-like PCBs are already included within "Total PCBs", for which the CTR has established a specific standard, dioxin-like PCBs are not included in this Order's version of the TEF scheme.

adopt revised water quality criteria guidance subsequent to their health reassessment for dioxin-like compounds.

(2) The Basin Plan contains a narrative WQO for bio-accumulative substances: "Many pollutants can accumulate on particulates, in sediments, or bio-accumulate in fish and other aquatic organisms. Controllable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life. Effects on aquatic organisms, wildlife, and human health will be considered."

This narrative WQO applies to dioxin and furan compounds, based in part on the scientific community's consensus that these compounds associate with particulates, accumulate in sediments and bio-accumulate in the fatty tissue of fish and other organisms.

(3) The USEPA's 303(d) listing determined that the narrative objective for bio-accumulative pollutants was not met because of the levels of dioxins and furans in fish tissue.

(4) The limited data collected to date show some of the dioxin congeners present, but the levels of detection are above the CTR criteria. Dioxins and furans are found in catalytic reforming wastewaters at the refinery. As shown in Tables 4 and 5, ambient receiving water quality data provided in the May 15, 2003, BACWA report show TCDD Equivalents exceeding the WQC; therefore, there is Reasonable Potential for TCDD Equivalents.

46. *Polychlorinated Biphenyl (PCBs).* In support of the Board's TMDL development for PCBs, the San Francisco Estuary Institute measured PCB congeners in Bay Area refinery discharges using sensitive analytical techniques with large sample volumes to achieve low detection limits. It published the results of these analyses in *Polychlorinated Biphenyls in Northern San Francisco Estuary Refinery Effluents*, dated September 10, 2002, which indicates that ConocoPhillips' effluent contained total PCBs ranging from 171 to 345 pg/L. As the MEC of PCBs in the Discharger's effluent exceeds the WQC for protecting human health, the discharge has a reasonable potential to cause exceedances of the WQC for PCBs. However, the methodology described above has not been approved by USEPA, and therefore, cannot be used for compliance purposes. The only known historical presence of PCBs at the site was sealed electrical transformers and there is no physical, written, or anecdotal evidence that transformers containing oil with PCBs ever leaked to ground surfaces within the facility. However, in the previous Order, the Board determined that there is reasonable potential for PCBs and the results from the above analysis suggest a reasonable potential exists. This reasonable potential is based on:

- The historical presence of PCBs at the facility;
- The San Francisco Estuary Institute's detection of PCBs above the WQC (described above);
- The detection limits for PCBs using approved USEPA methods are above the WQC, thus, PCBs maybe discharged at a level below the detection limits but above WQC; and
- PCBs are persistent bioaccumulative toxicants that have impaired the receiving waterbody. In addition, the PCBs have been included in the 303(d) listing because of high fish tissue levels.[2]

Since it is infeasible to comply with final WQBELs for PCBs because the detection limit of analytical methods approved by USEPA are too high, this Order includes interim limits that are based on the previous permit.

[2] Contaminant Levels in Fish Tissue from San Francisco Bay, San Francisco Regional Water Quality Control Board (June 1997).

47. *Polynuclear Aromatic Hydrocarbons (PAHs).* The RPA was conducted on individual and total PAHs, as required by the SIP, CTR, and Basin Plan. No PAHs have been detected in the effluent. However, for some PAHs, the detection levels achieved by the Discharger are above the applicable WQC. While the previous Order included a total PAHs limit, this Order does not find that reasonable potential exists for total or individual PAHs. This finding is consistent with State Water Resources Control Board Order WQO 2002-0011 (i.e., there is not sufficient evidence to suggest that these pollutants have the potential to exhibit reasonable potential even though detection limits are above the WQC).

48. *Benzene, alpha-BHC, alpha-Endosulfan, beta-Endosulfan, and Endrin.* The previous Order contained effluent limits for these pollutants. As indicated in an earlier finding, these constituents do not have a reasonable potential to cause an exceedance of their respective WQC. Accordingly, this Order does not propose to include effluent limitations for these constituents.

49. *Hexachlorobenzene, Aldrin, Chlordane, 4,4 DDT, Heptachlor,Heptachlor Expoxide, and Toxaphene:* The previous Order contained effluent limits for these pollutants. As indicated in an earlier finding, it was not possible to determine whether these constituents have reasonable potential to cause an exceedance of their respective WQC because detection limits were too high. In order to be consistent with State Water Resources Control Board Order WQO 2002-0011, this Order does not include effluent limits for these pollutants (i.e., there is not sufficient evidence to suggest that these pollutants have the potential to exhibit reasonable potential even though detection limits are above the WQC).

50. *4,4'-DDE and Dieldrin.*
    a. Board staff could not determine MECs for 4,4'-DDE and dieldrin because the effluent data consisted of all nondetect values, and all the detection limits were higher than the WQC (Section 1.3 of the SIP). The Board conducted the RPA by comparing the WQC with RMP ambient background concentration data gathered using research-based sample collection, concentration, and analytical methods. This analysis concluded that the background concentrations are greater than the WQC and, therefore, that 4,4'-DDE and dieldrin have Reasonable Potential, and numeric WQBELs are required. Although 4,4'-DDE maximum background data are questionable owing to blank contamination, these data were used to evaluate Reasonable Potential for 4,4'-DDE, based on the following considerations: (1) other RMP monitoring data from stations close to the Discharger's outfall show elevated 4,4'-DDE concentrations (such as Suisun Bay, Sacramento River stations, and the like); and (2) 4,4'-DDE in fish tissue in the Bay has exceeded the fish advisory level.

    b. The current 303(d) list includes the Bay as impaired for dieldrin and DDT; 4,4'-DDE is chemically linked to the presence of DDT. The Board intends to develop TMDLs that will lead to the overall reduction of dieldrin and 4,4'-DDE. The WQBELs specified in this Order may be changed to reflect the WLAs from this TMDL. Ongoing studies are investigating the feasibility and reliability of different methods of increasing sample volumes to lower the detection limits for pesticides. Since dieldrin and 4,4'-DDE are both bioaccumulative and on the 303(d) list owing to fish tissue concentrations, there is no assimilative capacity, and no dilution credit was allowed in the final limitation calculations.

51. *Other organics.* Self-monitoring data indicate that from 2001 to 2004, the Discharger sampled for all organic pollutants specified in the CTR. This data set was used to perform the RPA for organic pollutants. The Discharger is required to continue monitoring its effluent for priority pollutants under the requirement of Provision D.6. Upon completion of the monitoring, the Board may re-evaluate the RPA and determine if WQBELs are required.

52. *Effluent Monitoring.* This Order does not include effluent limitations for constituents that do not show reasonable potential, but continued monitoring for these pollutants is required as described in Provision D.6 and the August 6, 2001 letter, which is further described in a later finding. If concentrations of these constituents increase significantly the Discharger will be required to investigate the source of the increases and establish remedial measures if the increases result in reasonable potential to cause or contribute to an excursion above the applicable WQO/WQC.

53. *Permit Reopener.* The Order includes a reopener provision to allow numeric effluent limitations to be added or deleted in the future for any constituent that exhibits or does not exhibit, respectively, reasonable potential. The Board will make this determination based on monitoring results.

Development of Effluent Limitations for E-002

54. *Copper*

a) *Copper WQC.* The saltwater criteria for copper in the adopted CTR are 3.1 µg/L for chronic protection and 4.8 µg/L for acute protection. Included in the CTR are translator values to convert the dissolved criteria to total criteria. The Discharger may also perform a translator study to determine a more site-specific translator. The SIP, Section 1.4.1, and the June 1996 USEPA guidance document, entitled *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion,* describe this process and provide guidance on how to establish a site-specific translator. Using the CTR translator, translated criteria of 3.7 µg/L for chronic protection and 5.8 µg/L for acute protection were used to calculate effluent limitations.

b) *RPA Results.* This Order establishes effluent limitations for copper because the 20 µg/L MEC exceeds the governing WQC of 3.7 µg/L, demonstrating Reasonable Potential by Trigger 1, above.

c) *Water Quality Based Effluent Limitations.* The copper WQBELs calculated according to SIP procedures are 25 µg/L as the MDEL, and 13 µg/L as the AMEL.

d) *Immediate Compliance Infeasible.* The Discharger's Infeasibility Study asserts the Discharger cannot immediately comply with these WQBELs. Board staff statistically analyzed the Discharger's effluent data from January 2001 through August 2004. Based on this analysis, the Board determines that the assertion of infeasibility to comply is substantiated for copper (see Fact Sheet for detailed results of statistical analysis).

e) *Interim Limitation.* Because it is infeasible for the Discharger to immediately comply with the copper WQBELs, an interim limitation is required. Board staff conducted a statistical analysis of recent effluent data. Historically, interim performance-based effluent limitations (IPBELs) have been referenced to the 99.87th percentile value of recent effluent data. Statistical analysis indicates that the 99.87th percentile of the recent copper effluent data is 45 µg/L. The previous permit included a WQBEL of 37 µg/L as a daily maximum, which is more stringent than the 99.87th percentile of the recent effluent data. Therefore, the previous permit limitation of 37 µg/L is established in this Order as the interim limitation, expressed as a daily maximum limitation.

f) *Discharger Performance and Attainability.* During the period from January 2001 through August 2004, all effluent copper concentrations were below the 37 µg/L interim limitation (range from 1.8 µg/L to 20 µg/L, 44 samples); therefore, it is expected that the Discharger can comply with the interim limitation for copper.

g) *Term of Interim Limitation.* The copper interim limitation shall remain in force until May 17, 2010, or until the Board amends the limitations based on additional data or site-specific objectives (SSOs).

h) *Copper Source Control Strategy.* As a prerequisite to being granted the compliance schedule and interim limits described above, the Discharger must implement copper source control strategies, as required by Provision D.8 of this Order.

i) *Antibacksliding/Antidegradation.* Antibacksliding and antidegradation requirements are satisfied, since the interim effluent limitation is based on the previous permit limitation, and the final limits are more stringent.

55. *Lead*

a) *Lead WQOs.* The Basin Plan contains freshwater WQOs for lead 1.3 µg/L as a four-day average, and 32 µg/L as a 1-hour average, as calculated using the receiving water hardness value of 48 mg/L, as $CaCO_3$.

b) RPA Results. This Order establishes effluent limitations for lead because the 3.1 µg/L MEC exceeds the governing WQO of 1.3 µg/L, demonstrating Reasonable Potential by Trigger 1, above.

c) *WQBELs.* The lead WQBELs calculated according to SIP procedures are 9.5 µg/L as the MDEL and 3.2 µg/L as the AMEL.

d) *Immediate Compliance Feasible.* The Discharger's Infeasibility Study asserts the Discharger cannot immediately comply with these WQBELs. Board staff statistically analyzed the Discharger's effluent data from January 2001 through August 2004. Based on this analysis, the Board determines that the assertion of infeasibility to comply is not substantiated for lead (see Fact Sheet for detailed results of statistical analysis). Therefore, this Order includes final WQBELs for this pollutant.

e) *Discharger Performance and Attainability.* During the period from January 2001 through August 2004, all effluent lead concentrations were below the 3.2 µg/L AMEL (range from < 0.04 µg/L to 3.1 µg/L, 43 samples); therefore, it is expected that the Discharger can comply with the final limitation for lead.

f) *Antibacksliding/Antidegradation.* Antibacksliding and antidegradation requirements are satisfied, since the final WQBEL is more stringent than the previous permit limit.

56. *Mercury*

a) *Mercury WQOs/WQC.* Both the Basin Plan and the CTR include objectives and criteria that govern mercury in the receiving water. The Basin Plan specifies objectives for the protection of aquatic life of 0.025 µg/L as a 4-day average and 2.1 µg/L as a 1-hour average. The CTR specifies a long-term average criterion for protection of human health of 0.051 µg/L.

b) *RPA Results.* This Order establishes effluent limitations for mercury because the 0.518 µg/L MEC exceeds the governing WQO of 0.025 µg/L, demonstrating Reasonable Potential by Trigger 1, above.

c) *WQBELs.* The mercury WQBELs calculated according to SIP procedures are 0.045 µg/L as the MDEL and 0.019 µg/L as the AMEL.

d) *Immediate Compliance Infeasible.* The Discharger's Infeasibility Study asserts the Discharger cannot immediately comply with the mercury WQBELs. Board staff statistically analyzed the Discharger's effluent data from January 2001 through August 2004. Based on this analysis, the Board determines that the assertion of infeasibility is substantiated for mercury (see Fact Sheet for detailed results of statistical analysis).

e) *IPBEL.* Because it is infeasible for the Discharger to immediately comply with the mercury WQBELs, an interim limitation is required. In light of the similarities between refineries regarding the nature of their process wastes and treatment technologies involved, in 2001 Board staff pooled ultraclean mercury data from the refineries to enable a statistical approach to setting an interim limit based on best available information and performance. Statistical analysis from this pooled data set results in an interim performance-based monthly average mercury effluent limit of 0.075 µg/L that is applicable to refinery discharges. The previous permit included a WQBEL of 0.21 µg/L as a monthly average, and 1 µg/L as a daily maximum.

f) *Interim Mercury Mass Emission Limitation.* In addition to the concentration-based mercury IPBEL, this Order establishes an interim 12-month moving average mercury mass-based effluent limitation of 0.024 kg/month. This is based on treatment plant performance at the 99.87 percentile value (or average + 3* standard deviation) determined from effluent data gathered from January 2001 through August 2004. To calculate this mass limit for mercury, the Board used the average monthly flow and the mercury datum for that period (the Discharger only monitors for mercury on a monthly basis). This mass-based effluent limitation maintains current loadings until a TMDL is established. The final mass-based effluent limitation will be based on the WLA derived from the mercury TMDL.

g) *Discharger's Performance and Attainability.* During the period January 2001 through August 2004, the Discharger's effluent concentrations were below the interim limitation of 0.075 µg/L (range from 0.0006 µg/L to 0.0665 µg/L, 47 samples, excluding June 5, 2001, datum of 0.518 µg/L); therefore, it is expected that the Discharger can comply with the interim limitation for mercury.

h) *Term of IPBEL.* The mercury IPBEL shall remain in effect until April 27, 2010 or until the Board amends the limitations based on additional data, SSOs, or the WLA in the TMDL. During the next permit reissuance, Board staff may reevaluate the mercury IPBEL.

i) *Mercury Source Control Strategy.* As a prerequisite to being granted the compliance schedule and interim limits described above, the Discharger must implement mercury source control strategies, as required by Provision D.8 of this Order.

j) *Expected Final Mercury Limitations.* The final mercury WQBELs and the interim mass limitation will be revised to be consistent with the WLA assigned in the adopted mercury TMDL. In order to maintain current ambient receiving water conditions while the TMDL is being developed, the Discharger must comply with performance-based mercury concentration and mass-based limitations contained in this Order.

k) *Antibacksliding/Antidegradation.* Antibacksliding and antidegradation requirements are satisfied, since the interim and final effluent limitations are both more stringent than the previous permit.

57. *Nickel*

a) *Nickel WQOs.* The saltwater criteria for nickel in the adopted CTR are 8.2 µg/L for chronic protection and 74 µg/L for acute protection. Included in the CTR are translator values to convert the dissolved criteria to total criteria. The Discharger may also perform a translator study to determine a more site-specific translator. The SIP, Section 1.4.1, and the June 1996 USEPA guidance document, entitled *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion,* describe this process and provide guidance on how to establish a site-specific translator. Using the CTR translator, translated criteria of 8.3 µg/L for chronic protection and 75 µg/L for acute protection were used to calculate effluent limitations.

b) *RPA Results.* This Order establishes effluent limitations for nickel because the 13 µg/L MEC exceeds the governing WQO of 8.3 µg/L, demonstrating Reasonable Potential by Trigger 1, above.

c) *WQBELs.* The nickel WQBELs calculated according to SIP procedures are 82 µg/L as the MDEL and 41 µg/L as the AMEL.

d) *Discharger Performance and Attainability.* During the period from January 2001 through August 2004, all effluent nickel concentrations were below the 41 µg/L AMEL (range from 1.1 µg/L to 13 µg/L, 44 samples); therefore, it is expected that the Discharger can comply with final WQBELs for nickel.

e) *Antibacksliding/Antidegradation.* Antibacksliding and antidegradation requirements are satisfied because the calculated WQBELs are more stringent than the previous permit. Though the previous limit of 53 µg/L is numerically more stringent than the calculated MDEL of 82 µg/L, the pair of AMEL/MDEL is statistically more stringent than the single daily maximum limit.

58. *Selenium*

a) *Selenium WQC.* Selenium WQC were promulgated in the NTR for specific waters, which include San Pablo Bay. The NTR established a Criterion Chronic Concentration (CCC) for the protection of aquatic life of 5 µg/L and a Criterion Maximum Concentration (CMC) for the protection of aquatic life of 20 µg/L.

b) *RPA Results.* The 49 µg/L MEC exceeds the governing WQC of 5 µg/L, demonstrating Reasonable Potential by Trigger 1, above.

c) *Concentration-based WQBELs.* The WQBELs calculated according to SIP procedures are 8.0 µg/L as the MDEL and 4.2 µg/L as the AMEL.

d) *Immediate Compliance Infeasible.* The Discharger's Infeasibility Study asserts the Discharger cannot immediately comply with these WQBELs. Board staff statistically analyzed the Discharger's effluent data from January 2001 through August 2004. Based on this analysis, the Board determines that the assertion of infeasibility is substantiated for selenium (see Fact Sheet for detailed results of statistical analysis).

e) *IPBEL.* Because it is infeasible for the Discharger to immediately comply with the selenium WQBELs, an interim limitation is required. Board staff conducted a statistical analysis of recent effluent data. Historically, interim performance-based effluent limitations (IPBELs) have been referenced to the 99.87th percentile value of recent effluent data. Statistical analysis indicates that

the 99.87th percentile of the recent selenium effluent data is 55 µg/L. The previous permit included an interim limit of 50 µg/L as a daily maximum, which is more stringent than the 99.87th percentile of the recent effluent data. Therefore, the previous permit limitation of 50 µg/L is established in this Order as the interim limitation, expressed as a daily maximum limitation.

f) Development of Previous Permit Limitation. On February 20, 1991, and June 19, 1991, the Board adopted Order Nos. 91-026 and 91-099, respectively, amending the NPDES permits for all six refineries in the region, including the Discharger, to add concentration and mass emission limitations for selenium. Order No. 91-026 specified a limit of 50 µg/L as a daily maximum limit. Order No. 91-099 specified a limit of 0.85 lbs/day as a running annual average by December 12, 1993. On October 16, 1992, the Western States Petroleum Association (WSPA) filed a Petition with the Superior Court for the County of Solano on behalf of the six oil refineries seeking to set aside Order Nos. 91-026 and 91-099. On January 19, 1994, the Board adopted Resolution No. 94-016, which approved a Settlement Agreement between WSPA and the Board. The Settlement Agreement adopted the limits included in Orders 91-026 and 91-099. The previous Order includes the daily maximum concentration limit of 50 µg/L and a more stringent annual average mass emission limit of 0.85 lb/day.

g) *Discharger's Performance and Attainability.* During the period January 2001 through August 2004, the Discharger's effluent concentrations were below the interim limitation of 50 µg/L (range from < 1 µg/L to 49 µg/L, 192 samples); therefore, it is expected that the Discharger can comply with the interim limitation for selenium.

h) *Term of IPBEL.* The selenium interim limitation shall remain in effect until April 27, 2010, or until the Board amends the limitations based on additional data, SSOs, or the WLA in the TMDL.

i) *Selenium Source Control Strategy.* As a prerequisite to being granted the compliance schedule and interim limits described above, the Discharger must implement selenium source control strategies, as required by Provision D.8 of this Order.

j) *Expected Final Selenium Limitations.* The final selenium WQBELs will be revised to be consistent with the WLA assigned in the adopted selenium TMDL. While the TMDL is being developed, the Discharger will comply with the performance-based selenium concentration limitation to cooperate in maintaining current ambient receiving water conditions.

k) *Antibacksliding/Antidegradation.* Antibacksliding and antidegradation requirements are satisfied, since the interim effluent limitation is based on the previous permit limitation, and the final limits are more stringent.

59. *Cyanide*

a) *Cyanide WQC.* Cyanide WQC were promulgated in the NTR for specific waters, which include San Pablo Bay. The NTR established a Criterion Chronic Concentration (CCC) and a Criterion Maximum Concentration (CMC) for the protection of aquatic life of 1 µg/L.

b) *RPA Results.* The 9 µg/L MEC exceeds the governing WQC of 1 µg/L, demonstrating Reasonable Potential by Trigger 1, above.

c) *Concentration-based WQBELs.* The WQBELs calculated according to SIP procedures are 6.4 µg/L as the MDEL and 3.2 µg/L as the AMEL.

d) *Immediate Compliance Infeasible.* The Discharger's Infeasibility Study asserts the Discharger cannot immediately comply with these WQBELs. Board staff statistically analyzed the Discharger's effluent data from January 2001 through August 2004. Based on this analysis, the Board determines that the assertion of infeasibility is substantiated for cyanide (see Fact Sheet for detailed results of statistical analysis.

e) *IPBEL.* Because it is infeasible for the Discharger to immediately comply with the cyanide WQBELs, an interim limitation is required. The Board considered self-monitoring data from January 2001 through August 2004 (cyanide concentrations ranged from < 3 µg/L to 9 µg/L) to develop an interim performance based limit. However, the data only contained 12 detected values out of 44 samples, and therefore, it was not possible to perform a meaningful statistical evaluation of current treatment performance. The previous permit included a WQBEL of 25 µg/L as a daily maximum. Therefore, the previous permit limitation of 25 µg/L is established in this Order as the interim limitation, expressed as a daily maximum limitation.

f) *Discharger's Performance and Attainability.* During the period January 2001 through August 2004, the Discharger's effluent concentrations were below the interim limitation of 25 µg/L (range from < 3 µg/L to 9 µg/L, 44 samples); therefore, it is expected that the Discharger can comply with the interim limitation for cyanide.

g) *Term of IPBEL.* The cyanide interim limitation shall remain in effect until April 27, 2010, or until the Board amends the limitations based on additional data or site-specific objectives (SSOs).

h) *Cyanide Source Control Strategy.* As a prerequisite to being granted the compliance schedule and interim limits described above, the Discharger must implement cyanide source control strategies, as required by Provision D.8 of this Order.

i) *Antibacksliding/Antidegradation.* Antibacksliding and antidegradation requirements are satisfied, since the interim effluent limitation is based on the previous permit limitation, and the final limits are more stringent.

60. *TCDD Equivalents*

a) *Dioxin TEQ WQC.* The CTR establishes a numeric human health WQC of 0.014 pg/L for 2,3,7,8-TCDD based on consumption of organisms. The preamble of the CTR states that California NPDES permits should use TEQs where dioxin-like compounds have Reasonable Potential with respect to narrative criteria. The preamble further states that USEPA intends to use the 1998 World Health Organization TEF scheme in the future and encourages California to use this scheme in State programs. In addition, the CTR preamble states USEPA's intent to adopt revised WQC guidance subsequent to their health reassessment for dioxin-like compounds. The Board used TEQs to translate the narrative WQOs to numeric WQOs for the other 16 congeners.

b) *RPA Results.* Dioxins and furans are known to form during the regeneration of catalytic reformers and the Discharger's wastewater from caustic washes in the catalytic reforming process can contain dioxins and furans. Therefore, there is reasonable potential for TCDD Equivalents. Currently, it is not possible to document compliance with dioxin TEQ limits, as analytical reporting limits available from commercial laboratories using approved USEPA protocols are not low enough. Additionally, the dioxin TEQ maximum background concentration is above the governing WQC, which triggers RP using Trigger 2, above.

c) *Dioxin TEQ Effluent Limits.* The TCDD Equivalents WQBELs calculated according to SIP procedures are 0.028 pg/L as the MDEL and 0.014 pg/L as the AMEL.

d) *Immediate Compliance Infeasible.* Compliance with the final WQBELs cannot be demonstrated at this time as the MLs for TCDD Equivalents are higher than the final calculated WQBELs.

e) *IPBEL.* Because it is infeasible for the Discharger to immediately comply with the TCDD Equivalents WQBELs, an interim limitation is required. Historically, interim performance-based effluent limitations (IPBELs) have been referenced to the 99.87th percentile value of recent effluent data. In this case, a statistical analysis is not possible due to the number of nondetects. The previous permit included an interim limitation of 0.14 pg/L as a monthly average. Therefore, the previous permit limitation of 0.14 pg/L is established in this Order as the interim limitation, expressed as a monthly average limitation.

f) *Discharger's Performance and Attainability.* Self-monitoring effluent data are available from January 2001 through August 2004. During this time, TCDD Equivalents ranged from nondetect to 0.0013 pg/L (assuming a zero value for nondetect congeners); therefore, it is expected that the Discharger can comply with interim limits provided non-detect is considered zero in TEQ calculations consistent with the SIP.

g) *Term of IPBEL.* The TCDD Equivalents interim limitation shall remain in effect until September 1, 2015, or until the Board amends the limitations based on additional data, SSOs, or the WLA in the TMDL.

h) *Dioxin TEQ Source Control Strategy.* As a prerequisite to being granted the compliance schedule and interim limits described above, the Discharger must implement dioxin TEQ source control strategies, as required by Provision D.8 of this Order.

i) *Expected Final Dioxin TEQ Limitations.* The final TCDD Equivalent WQBELs will be revised to be consistent with the WLA assigned in the adopted dioxin TEQ TMDL. While the TMDL is being developed, the Discharger will comply with the performance-based TCDD Equivalent concentration limitation to cooperate in maintaining current ambient receiving water conditions. Municipal and industrial sources are very small contributors of the dioxins and furans load to the Bay, and the dominant sources are from current and historical air emissions. Because of this, it is unlikely that the TMDL will require reduction efforts beyond the controls required by this permit.

61. *4,4' DDE and Dieldrin*

a) *WQC.* In the CTR, the lowest criteria for 4,4'-DDE and dieldrin are the human health values based on the consumption of organisms of 0.00059 µg/L and 0.00014 µg/L, respectively.

b) *RPA Results.* This Order establishes limitations for 4,4'-DDE and dieldrin because the ambient background concentrations (0.000693 µg/L and 0.000264 µg/L, respectively) exceed the governing WQC, demonstrating a Reasonable Potential by Trigger 2, above.

c) *WQBELs.* The 4,4'-DDE and dieldrin WQBELs calculated according to SIP procedures are 0.00059 µg/L as the AMEL and 0.00118 µg/L as the MDEL for 4,4'-DDE, and 0.00014 µg/L as the AMEL and 0.00028 µg/L as the MDEL for dieldrin.

d) *Immediate Compliance Infeasible.* Compliance with the final WQBELs cannot be demonstrated at this time as the MLs, 0.05 µg/L for 4,4'-DDE and 0.01 µg/L for dieldrin identified in Appendix 4 of the SIP, are higher than the final calculated WQBELs.

e) *Interim Effluent Limitations.* Interim limitations are established at the respective MLs. The interim limitations are as follows: 0.05 µg/L for 4,4'-DDE and 0.01 µg/L for dieldrin as the MDELs.

f) *Discharger's Performance and Attainability.* Self-monitoring effluent data are available from January 2001 through August 2004. Neither pollutant was detected in the effluent in any of the samples; therefore, it is expected that the Discharger can comply with interim limits.

g) *Term of Interim Effluent Limitations.* The 4,4'-DDE and dieldrin interim effluent limitations shall remain in effect until May 17, 2010, or until the Board amends the limitations based on additional data, SSOs, or the WLA in the TMDL.

62. *PCBs*

a) *PCBs WQC.* The CTR contains a numeric water quality criterion of 0.00017 µg/L for the sum of seven individual PCB compounds for the protection of human health based on the consumption of aquatic organisms.

b) *RPA Results.* The 375 pg/L MEC exceeds the governing WQC of 170 pg/L, demonstrating Reasonable Potential by Trigger 1, above.

c) *PCB Effluent Limits.* The WQBELs calculated according to SIP procedures are 0.00034 µg/L as the MDEL and 0.00017 µg/L as the AMEL.

d) *Immediate Compliance Infeasible.* Compliance with the final WQBELs cannot be determined at this time as the MLs of 0.5 µg/L (for each PCB) identified in Appendix 4 of the SIP, are higher than the final calculated WQBELs.

e) *Interim Effluent Limitations.* Interim limitations are established at the respective MLs. The Discharger may demonstrate compliance by showing no detection of any PCBs above the SIP ML of 0.5 µg/L. The previous Order includes interim limits for total PCB of 0.0007 µg/L (monthly average) and 0.3 µg/L (daily average) developed based on BPJ.

f) *Discharger's Performance and Attainability.* Self-monitoring effluent data are available from January 2001 through August 2004. PCBs were not detected in the effluent in any of the samples using USEPA approved protocols. As mentioned in an earlier finding, the Discharger detected PCBs using sensitive analytical techniques, but at levels well below the ML. Therefore, the Discharger should be able to comply with the interim effluent limitations contained in this Order.

g) *Term of Interim Effluent Limitations.* PCBs interim effluent limitations shall remain in effect until May 17, 2010, or until the Board amends the limitations based on additional data, SSOs, or the WLA in the TMDL.

63. *Chlorodibromomethane*

a) *Chlorodibromomethane WQC.* The CTR contains a numeric water quality criterion of 34 µg/L for the protection of human health based on the consumption of aquatic organisms.

b) *RPA Results.* The 43 µg/L MEC exceeds the governing WQC of 34 µg/L, demonstrating Reasonable Potential by Trigger 1, above.

c) *WQBELs.* The chlorodibromomethane WQBELs calculated according to SIP procedures are 650 µg/L as the MDEL and 340 µg/L as the AMEL.

d) *Discharger Performance and Attainability.* During the period from January 2001 through August 2004, all effluent chlorodibromomethane concentrations were below the 340 µg/L AMEL (range from < 0.3 µg/L to 43 µg/L, 18 samples); therefore, it is expected that the Discharger can comply with the final limitation for this pollutant.

64. *Dichlorobromomethane*

a) *Dichlorobromomethane WQC.* The CTR contains a numeric water quality criterion of 46 µg/L for the protection of human health based on the consumption of aquatic organisms.

b) *RPA Results.* The 60 µg/L MEC exceeds the governing WQC of 46 µg/L, demonstrating Reasonable Potential by Trigger 1, above.

c) *WQBELs.* The dichlorobromomethane WQBELs calculated according to SIP procedures are 940 µg/L as the MDEL and 460 µg/L as the AMEL.

d) *Discharger Performance and Attainability.* During the period from January 2001 through August 2004, all effluent dichlorobromomethane concentrations were below the 460 µg/L AMEL (range from < 0.2 µg/L to 60 µg/L, 18 samples); therefore, it is expected that the Discharger can comply with the final limitation for this pollutant.

Development of Effluent Limitations for E-003

65. *Temperature:* The State's *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California* (Thermal Plan) indicates that for existing discharges to Enclosed Bays (e.g., San Francisco Bay), discharges shall comply with limitations necessary to assure protection of beneficial uses. The Discharger conducted a Thermal Study, dated February 2, 2001, that concludes elevated temperatures in E-003 do not adversely affect beneficial uses as permitted under the previous Order. The Thermal Study found that the thermal plume from E-003 predominately occurs near the surface, and the location and magnitude of the plume changes significantly based on the tidal cycle. The Discharger's Report indicates that influence of the plume on the aquatic community is thought to be minimal with no adverse effect to beneficial uses, although there was indication of preference for ambient temperatures by some pelagic species. Therefore, in order to more fully document the effect of thermal discharges on aquatic life, this Order requires that the Discharger perform additional monitoring.

66. *Background:* As indicated in an earlier finding, the Discharger grouped the pollutants that triggered reasonable potential into three categories: (a) those not associated with once-through non-contact system metallurgy (i.e., lead, selenium, cyanide, and dioxin), (b) those associated with once-through non-contact system metallurgy (copper, nickel, and zinc), and (c) pollutants (4,4-DDE and Dieldrin) that are below the analytical detection limit, which makes it impossible to document compliance with final WQBELs. For all pollutants that triggered reasonable potential at the E-003 discharge (with the exception of zinc), the Discharger reports that these pollutants are also found in levels above the criteria at the intake (I-001). For this reason, the Discharger explains that it cannot identify and implement actions to achieve compliance at E-003 for these pollutants.

67. *Pollutants not Associated with Noncontact Metallurgy E-003:* For those pollutants not associated with noncontact metallurgy, the Discharger indicates that there are few if any sources of these pollutants that could enter the once-through cooling water system. This is supported by analytical

data that indicates influent and effluent concentrations for arsenic, lead, selenium, and dioxin are very similar, as shown in Table 6 below:

Table 6: E-003-Pollutants Not Associated with Noncontact Metallurgy

Pollutant	Influent		Effluent		WQBEL[1]	
	Average	Maximum	Average	Maximum	AMEL	MDEL
Arsenic	39.4	49	39.8	49	29	59
Lead	0.91	1.4	0.95	1.4	1.0	2.1
Selenium	20.4	27	20.8	31	4.1	8.2
Dioxin (as TEQ)	NA	$5.09*10^{-8}$	NA	$5.86*10^{-8}$	$1.4*10^{-8}$	$2.8*10^{-8}$

[1] For reasons documented below, the final WQBEL shown in this table are not being imposed in this Order.

For the above pollutants, the Discharger indicates that waste minimization and pollution prevention efforts are impossible since these pollutants do not appear to be increased by its cooling water system. Since the SIP provides for intake credits for this situation, it is appropriate to base effluent limits on influent concentrations. However, in this case, the Discharger has not collected a sufficient amount of data to calculate such limits. Therefore, this Order includes a Provision that requires the Discharger to propose effluent limits based on influent concentrations once it has collected a sufficient number of samples for each pollutant (collected monthly to account for seasonality).

68. ***Pollutants Associated with Noncontact Metallurgy E-003:*** For those pollutants associated with noncontact metallurgy, the Discharger indicates that saltwater pumps, booster pumps, strainers, and heat exchangers could internally corrode and release soluble copper and nickel. Additionally, the Discharger indicates that zinc anodes are installed on heat exchangers for corrosion protection. This releases zinc to saltwater, but minimizes the release of other metals. Table 7 below shows that copper, nickel, and zinc increase in concentrations from the cooling system process (based on five influent and five effluent samples).

Table 7: Pollutants Associated with Noncontact Metallurgy

Pollutant	Influent		Effluent		WQBEL[1]	
	Average	Maximum	Average	Maximum	AMEL	MDEL
Copper	9.9	11	18.8	51	2.9	5.8
Nickel	16.8	24	22.6	41	6.8	13.6
Zinc	18.2	20	72	80	32	64

[1] For reasons documented below, the final WQBEL shown in this table are not being imposed in this Order.

In order to control the above pollutants to the maximum extent possible, the Discharger indicates that it has (a) upgraded specific elements of its saltwater cooling system metallurgy (e.g., some heat exchanger components) from brass, bronze, and copper-containing alloys to more corrosion resistant metals such as titanium; and (b) started to phase-out zinc based cathodic protection by installing impressed current systems that may eliminate the need for zinc anodes. The Discharger indicates that these upgrades will continue over the next several years, and that these changes can only be made when sections of the cooling water system are taken out of service. Additionally, the Discharger asserts that it may not be feasible to upgrade all components through metallurgy or impressed current. To ensure that the Discharger implements these pollution prevention measures to the maximum extent feasible, this Order includes a provision that requires the Discharger to propose a schedule for implementation of the above and other upgrades. As with pollutants not associated with noncontact

metallurgy, final limits will be based on intake credits, as required by Provision D.2. While effluent concentrations of copper, nickel, and zinc are above influent concentrations, it is not possible to calculate interim limits to ensure the Discharger maintains current performance. This is because of limited data. However, as indicated above, Provision D.3 requires that the Discharger implement additional source control for these pollutants. Therefore, current treatment performance for copper, nickel, and zinc is expected to improve before final limits are developed.

69. *4,4-DDE and Dieldrin.*
On 4,4-DDE and Dieldrin, it is not possible for the Discharger to document compliance with final WQBELs because USEPA approved analytical techniques are not sensitive enough. Reasonable potential for these pollutants is based on background levels in the Bay exceeding WQBELs. Table 8 below, shows that 4,4-DDE and Dieldrin have yet to be detected in the Discharger's influent or effluent.

Table 8: E-003-4,4-DDE and Dieldrin

Pollutant	Influent		Effluent		WQBEL[1]	
	Average	Maximum	Average	Maximum	AMEL	MDEL
4,4-DDE	< 0.002	< 0.002	< 0.002	< 0.002	0.00059	0.00118
Dieldrin	< 0.002	< 0.002	< 0.002	< 0.002	0.00014	0.00028

[1] For reasons documented below, the final WQBEL shown in this table are not being imposed in this Order.

For 4,4-DDE and Dieldrin, the Discharger indicates that waste minimization and pollution prevention efforts are impossible since these pollutants have not been detected, and do not appear to be increased by its cooling water system. Since the SIP provides for intake credits for this situation, it is appropriate to base effluent limits on influent concentrations. However, in this case, the Discharger has not collected a sufficient amount of data to calculate such limits. Therefore, this Order includes a Provision that requires the Discharger to propose effluent limits based on influent concentrations once it has collected a sufficient number of samples for each pollutant (collected monthly to account for seasonality.

70. **Potential Fish Impingement and Entrainment at I-001**
As indicated in an earlier finding, the Discharger intakes about 30 mgd of water from the Bay at I-001 for use as once-through cooling water. To reduce the number of aquatic organisms lost as a result of water withdrawals associated with cooling water intake structures, the USEPA promulgated performance standards on September 7, 2004, for facilities with design capacities greater than 50 mgd. These performance standards are to reduce impingement mortality by 80 to 95 percent, and entrainment by 60 to 90 percent. Even though these regulations do not apply to the Discharger because of its small intake volume, the Discharger indicates that it has installed submerged cylindrical wedgewire screens at its intake structure that comply with USEPA approved technology. The Discharger indicates that these cylindrical wedgewire screens have been shown to reduce entrainment of aquatic organisms by 80 to 90 percent. A provision in this Order requires the Discharger to submit a report that documents these conclusions.

71. **Whole Effluent Acute Toxicity**
a) *Permit Requirements.* This Order includes effluent limits for whole-effluent acute toxicity that are unchanged from the previous Order. All bioassays shall be performed according to the U.S. EPA approved method in 40 CFR 136, currently "Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms, 5th Edition." SWRCB staff recommended to the Boards that new or renewed permit holders be allowed a time period in which laboratories can become proficient in conducting the new tests. The Discharger is required

to use the 5th Edition method for compliance determination upon the effective date of this Order. If the Discharger needs a time period for the transition from the 4th to the 5th Edition method, it should submit a written request with justifications to the Executive Officer within 30 days of the permit adoption date.

b) *Compliance History.* During 2001-2004, the eleven sample median survival was 80-100 percent. The 90th percentile survival was 95-100 percent. These data comply with effluent limitations.

Whole Effluent Chronic Toxicity

72. *Program History.* The Basin Plan contains a narrative toxicity objective stating that "All waters shall be maintained free of toxic substances in concentrations that are lethal to or produce other detrimental responses to aquatic organisms" and that "there shall be no chronic toxicity in ambient waters" (Basin Plan, page 3-4). In 1986, the Board initiated the Effluent Toxicity Characterization Program (ETCP), with the goal of developing and implementing toxicity limits for each discharger based on actual characteristics of both receiving waters and waste streams. Dischargers were required to monitor their effluent using critical life stage toxicity tests to generate information on toxicity test species sensitivity and effluent variability to allow development of appropriate chronic toxicity effluent limitations. In 1988 and 1991, selected dischargers conducted two rounds of effluent characterization. A third round was completed in 1995, and the Board is evaluating the need for an additional round. Board guidelines for conducting toxicity tests and analyzing results were published in 1988 and last updated in 1991.

73. Order No. 00-015 specified a numeric limit for chronic toxicity based on assessment of the information from the ETCP and to implement the Basin Plan's narrative objective for toxicity. Order No. 00-015 required the Discharger to perform toxicity testing on *Americamysis bahia* for compliance determination. Additionally, Order No. 00-015 required an effluent chronic toxicity testing screening program as part of the Discharger's application for permit reissuance to identify the most sensitive species. The Discharger submitted a report, dated April 2004, presenting the results of these tests. Additionally, the Discharger reports that screening studies were conducted in parallel with routine chronic toxicity monitoring for *Americamysis bahia*. Based on the three rounds of screening, and a review of self-monitoring data, it appears that *Americamysis bahia* is the most sensitive species.

74. In accordance with the toxicity testing requirements established in Order No. 00-015, the Discharger has conducted toxicity testing. Chronic toxicity testing data collected from 2001 to 2004 indicate a median value of 2 TU_c, and a 90th percentile value of 2 TU_c. These results are below the permit limits of 10 and 20 TU_c, respectively.

Pollutant Prevention and Pollutant Minimization

75. The Discharger has established a Pollution Prevention Program under the requirements specified by the Board in Chapter 4 of the Basin Plan. The Board expects the Discharger to continue with its efforts outside the scope of this NPDES permit as appropriate to proactively avoid water quality impacts from its discharges. Additionally,
    a. In accordance with Section 2.4.5 of the SIP, this NPDES permit specifies under what situations and for which priority pollutant(s) (i.e., reportable priority pollutants) the Discharger shall be required to conduct a Pollutant Minimization Program in accordance with Section 2.4.5.1.
    b. There may be some redundancy required between the Pollution Prevention Program and the Pollutant Minimization Program.

c. Where the two programs' requirements overlap, the Discharger is allowed to continue/modify/expand its existing Pollution Prevention Program to satisfy the Pollutant Minimization Program requirements.
d. Furthermore, for pollutants where the Discharger requested interim limits, this Order's provisions require the Discharger to conduct source control and/or pollution minimization measures described in the Discharger's infeasibility report submitted on January 7, 2005, consistent with Section 2.1 of the SIP.
e. Section 13263.3(d)(1)(C) establishes a separate process outside of the NPDES permit process for preparation, review, approval, and implementation of pollution prevention measures. The measures required in this NPDES permit are not intended to fulfill the requirements of 13263.

Requirement for Monitoring of Pollutants in Effluent and Receiving Water to Implement New Statewide Regulations and Policy

76. *SIP- Required Dioxin study.* The SIP states that each Board shall require major and minor POTWs and industrial dischargers in its region to conduct effluent monitoring for the 2,3,7,8-TCDD congeners whether or not an effluent limit is required for 2,3,7,8-TCDD. The monitoring is intended to assess the presence and amounts of the congeners being discharged to inland surface waters, enclosed bays, and estuaries. The SWRCB will use these monitoring data to establish strategies for a future multi-media approach to control these chemicals.

77. On August 6, 2001, the Board sent a letter to all the permitted dischargers pursuant to Section 13267 of the California Water Code requiring the submittal of effluent and receiving water data on priority pollutants. This formal request for technical information addresses the insufficient effluent and ambient background data, and the dioxin study. The letter (described above) is referenced throughout this Order as the "August 6, 2001 Letter".

78. Pursuant to the August 6, 2001 Letter from Board Staff, the Discharger was required to submit workplans and sampling results for characterizing the levels of selected constituents in the effluent and ambient receiving water. The requirements under the August 6, 2001, letter are continued under Provision D.6 of this Order.

79. *Monitoring Requirements (Self-Monitoring Program).* The SMP includes monitoring at the outfalls for conventional, non-conventional, and toxic pollutants, and acute and chronic toxicity. For two constituents that the Board has granted interim limits (e.g., copper and selenium), this Order contains weekly monitoring. The exceptions to this requirement are cyanide, mercury, dioxin, and pollutants where interim limits are an artifact of high detection limits. Additional cost and effort is required for ultra-clean mercury monitoring, thus this Order requires monthly monitoring. For dioxins and furans, due to the considerable costs and the non-detects the Discharger has found, this Order requires twice yearly monitoring. Additionally, this Order requires twice yearly monitoring for chlorodibromomethane, dichlorobromomethane, PCBs, dieldrin and 4,4'-DDE to demonstrate compliance with interim effluent limitations. In lieu of near field discharge specific ambient monitoring, it is acceptable that the Discharger participate in collaborative receiving water monitoring with other dischargers under the provisions of the August 6, 2001 letter, and the RMP.

80. *Optional Mass Offset.* This Order contains requirements to prevent further degradation of the impaired waterbody. Such requirements include the adoption of interim mass limits that are based on treatment plant performance, provisions for aggressive source control, feasibility studies for wastewater reclamation, and treatment plant optimization. After implementing these efforts, the

Discharger may find that further net reductions of the total mass loadings of the 303(d)-listed pollutants to the receiving water can only be achieved through a mass offset program. This Order includes an optional provision for a mass offset program.

Storm Water

81. The Discharger is required to continue to update and maintain its storm water pollution prevention plan (SWPPP) for the entire facility.

82. This Order retains the existing Order's effluent limitations for Outfall 004.

Other Discharge Characteristics and Permit Conditions

83. *NPDES Permit.* This Order serves as an NPDES Permit, adoption of which is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code [California Environmental Quality Act (CEQA)] pursuant to Section 13389 of the California Water Code.

84. *Notification.* The Discharger and interested agencies and persons have been notified of the Board's intent to reissue requirements for the existing discharges and have been provided an opportunity to submit their written views and recommendations. Board staff prepared a Fact Sheet and Response to Comments, which are hereby incorporated by reference as part of this Order.

85. *Public Hearing.* The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to the provisions of Division 7 of the California Water Code, regulations, and plans and policies adopted thereunder, and to the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, that the Discharger shall comply with the following:

A. DISCHARGE PROHIBITIONS

1. Discharge of any wastewater at a location or in a manner different from that described in this Order is prohibited.

2. Discharge of process wastewater E-002 at any point where it does not receive an initial dilution of at least 10:1 is prohibited.

3. The bypass or overflow of untreated or partially treated process wastewater to waters of the State, either at the treatment plant or from the collection system is prohibited.

B. EFFLUENT LIMITATIONS

Production-Based Mass Emission Limits & Technology-Based Concentration Limits

1. The discharge at Outfall 002 containing constituents in excess of any of the following mass loading limits, is prohibited:

Constituent	Units	Monthly Average	Daily Maximum
BOD_5	lb/day	850	1,500
TSS	lb/day	700	1,100
COD	lb/day	5,900	11,000

Constituent	Units	Monthly Average	Daily Maximum
Oil & Grease	lb/day	250	460
	mg/L	8.0	15
Phenolic Compounds	lb/day	4.7	11
Ammonia as N	lb/day	460	1,000
Sulfide	lb/day	4.8	10
Settleable Solids	mL/L	0.1	0.2
Total Chromium	lb/day	5.4	16
Hexavalent Chromium[1]	lb/day	0.45	1.0

[1] The Discharger may, at its option, meet this limitation by measurement of total chromium.

Storm Water Runoff and Ballast Water Allocations

2. In addition to the monthly average and daily maximum pollutant weight allowances shown in B.1, allocations for pollutants attributable to storm water runoff and ballast water discharged as a part of Outfall 002 are permitted in accordance with the following schedules:

STORM WATER RUNOFF ALLOCATION

Constituent	Units	Monthly Average	Daily Maximum
BOD (5-day @ 20C)	mg/l	26	48
TSS	mg/l	21	33
COD	mg/l	180	360
Oil & Grease	mg/l	8	15
Phenolic Compounds	mg/l	0.17	0.35
Total Chromium	mg/l	0.21	0.60
Hexavalent Chromium	mg/l	0.028	0.062

BALLAST WATER ALLOCATION

Constituent	Units	Monthly Average	Daily Maximum
BOD (5-day @ 20C)	mg/l	26	48
TSS	mg/l	21	33
COD	mg/l	240	470
Oil & Grease	mg/l	8	15
pH		within the range of 6.0 to 9.0	

The total effluent limitation is the sum of the storm water runoff allocation, the ballast water allocation and the mass limits contained in B.1.

Toxic Pollutants

3. Whole Effluent Acute Toxicity
Representative samples of the discharge at outfall 002 shall meet the following limits for acute toxicity. Compliance with these limits shall be achieved in accordance with Provision D.10 of this Order:

a. The survival of bioassay test organisms in 96-hour bioassays of undiluted effluent shall be:
(1) An eleven (11)-sample median value of not less than 90 percent survival; and
(2) An eleven (11)-sample 90th percentile value of not less than 70 percent survival.

b. These acute toxicity limits are further defined as follows:
(1) 11-sample median limit:
Any bioassay test showing survival of 90 percent or greater is not a violation of this limit. A bioassay test showing survival of less than 90 percent represents a violation of this effluent limit, if five or more of the past ten or fewer bioassay tests also show less than 90 percent survival.
(2) 90th percentile limit:
Any bioassay test showing survival of 70 percent or greater is not a violation of this limit. A bioassay test showing survival of less than 70 percent represents a violation of this effluent limit, if one or more of the past ten or fewer bioassay tests also show less than 70 percent survival.

4. Chronic Toxicity
(a) The survival of bioassay test organisms in the discharge at outfall 002 shall be:
(1) An eleven sample median value of equal to or less than 10 TUc,
(2) An eleven sample 90-percentile value of equal to or less than 20 TUc.

(b) These chronic toxicity limits are defined as follows:
(1) A test sample showing chronic toxicity greater than 10 TUc represents consistent toxicity and a violation of this limitation, if five or more of the past ten or less tests show toxicity greater than 10 TUc.
(2) A TUc equals 100/NOEL. The NOEL is the no observable effect level, determined from IC, EC, or NOEC values. These terms and their usage in determining compliance with the limitations are defined in the Attachment B of this Order. The NOEL shall be based on a critical life stage test using the most sensitive test species as specified by the Executive Officer. The Executive Officer may specify two compliance species if test data indicate that there is alternating sensitivity between the two species. If two compliance test species are specified; compliance shall be based on the maximum TUc value for the discharge sample based on a comparison of TUc values obtained through concurrent testing of the two species.
(3) A test sample showing chronic toxicity greater than 20 TUc represents a violation of this limitation if one or more of the past ten or less samples shows toxicity greater than 20 TUc.

5. **Toxic Substances**: The discharge at outfall 002 shall not exceed the following limits:

	WQBEL		Interim Limits			
Constituent	Daily Max	Monthly Average	Daily Maximum	Monthly Average	Units	Notes
Copper	25	13	37		µg/L	(1)(2)(4)
Mercury	0.045	0.019		0.075	µg/L	(1)(3)(4)
Lead	9.5	3.2			µg/L	(1)(4)
Nickel	82	41			µg/L	(1)(4)
Selenium	8.0	4.2	50		µg/L	(1)(2)(4)
Cyanide	6.4	3.2	25		µg/L	(1)(2)(4)
Chlorodibromomethane	650	340			µg/L	(1)(4)
Dichlorobromomethane	940	460			µg/L	(1)(4)
4,4'-DDE	0.0012	0.00059	0.05		µg/L	(1)(2)(4)
Dieldrin	0.00028	0.00014	0.01		µg/L	(1)(2)(4)
Total PCBs (Sum)	0.00034	0.00017	0.5		µg/L	(1)(2)(4)(5)
TCDD Equivalents	0.028	0.014		0.14	pg/L	(1)(6)

Footnotes:

(1) (a) All analyses shall be performed using current USEPA methods, or equivalent methods approved in writing by the Executive Officer.

(b) Limits apply to the average concentration of all samples collected during the averaging period (Daily = 24-hour period; Monthly = calendar month).

(2) Interim limits shall remain in effect for cyanide and selenium until April 27, 2010, and for Copper, 4,4-DDE, Dieldrin, and PCBs until May 17, 2010, or until the Board amends the limits based on site-specific objectives or the Waste Load Allocations in the TMDLs.

(3) Mercury: Effluent mercury monitoring shall be performed by using ultraclean sampling and analysis techniques to the maximum extent practicable, with a minimum level of 0.002 µg/l, or lower. The interim limit for mercury shall remain in effect until April 27, 2010, or until the Board amends the limit based on the Waste Load Allocation in the TMDL for mercury.

(4) As outlined in Section 2.4.5 of the SIP, the following are Minimum Levels that the Discharger shall achieve for pollutants with effluent limits. The table below indicates the highest minimum level that the Discharger's laboratory must achieve for calibration purposes.

Constituent	Minimum Level	Units
Copper	2	µg/L
Lead	0.5	µg/L
Mercury	0.002	µg/L
Nickel	5	µg/L
Selenium	2	µg/L
Cyanide	5	µg/L
Chlorodibromomethane	2	µg/L
Dichlorobromomethane	2	µg/L
4,4'-DDE	0.05	µg/L

Constituent	Minimum Level	Units
Dieldrin	0.01	µg/L
Benzo(a)Anthracene	5	µg/L
Benzo(a)Pyrene	2	µg/L
Benzo(b)Fluoranthene	10	µg/L
Benzo(k)Fluoranthene	2	µg/L
Chrysene	5	µg/L
Individual PCBs	0.5	µg/L

(5) The PCB limit applies to the sum of the following individual PCB compounds: PCB-1016, PCB-1221, PCB-1232, PCB-1242, PCB-1248, PCB-1254, and PCB-1260.

(6) TCDD Equivalents: The SIP does not contain an ML for this constituent, however, the Board requires use of one-half of those published in USEPA Method 1613. This interim limit shall remain effective until August 30, 2015, or until the Board amends the limits based on site-specific objectives or the Waste Load Allocations in the TMDLs. However, during the next permit reissuance, Board staff may re-evaluate the interim limit.

6. **Interim Mass Emission Limits – Mercury**
Until TMDL and WLA efforts for mercury provide enough information to establish a different WQBEL, the Discharger shall demonstrate that the total mercury mass loading from the discharge at outfall 002 to San Pablo Bay has not increased by complying with the following:

a. Interim mass emission limit: The mass emission limit for mercury is 0.024 kilograms per month (kg/month). The monthly average shall be calculated by taking the arithmetic average of the current daily mass loading value, and all of the previous month's values. Compliance with this limit shall be evaluated using monthly moving averages of total mass load, computed as described below:

12-Month Monthly Moving Average of Total Mass Load = Average of the monthly total mass loads from the past 12 months

b. The Discharger shall submit a cumulative total of mass loadings for the previous twelve months with each monthly Self-Monitoring Report. Compliance each month will be determined based on the 12-month moving averages over the previous twelve months of monitoring. The Discharger may use monitoring data collected under accelerated schedules (i.e., special studies) to determine compliance. This requirement may be satisfied by the 12-month moving average values calculated by the electronic reporting system (ERS).

c. The mercury TMDL and WLAs will supersede this mass emission limitation upon their completion. The Clean Water Act's antibacksliding rule, Section 402(o), indicates that this Order may be modified to include a less stringent requirement following completion of the TMDL and WLA, if the requirements for an exception to the rule are met.

7. **Interim Mass Emission Limits – Selenium**
Until TMDL and WLA efforts for selenium provide enough information to establish a different WQBEL, the Discharger shall demonstrate that the total selenium mass loading from the discharge at outfall 002 to San Pablo Bay has not increased by complying with the following:

a. Interim mass emission limit: The mass emission limit for selenium is 0.85 lb/day (running annual average). Running annual averages shall be calculated by taking the arithmetic average of the

current daily mass loading value, and all of the previous year's values. The total selenium mass load shall not exceed this limit.

8. The median of five consecutive samples collected from the discharge at Outfall 002 shall not have total coliform organisms exceeding 240 MPN/100 mL. Any single sample shall not exceed 10,000 MPN/100 mL.

9. The discharge from Outfall 002 shall not have residual chlorine greater than 0.0 mg/L.

10. The discharge from Outfall 002 shall not have a pH outside the range of 6.0 to 9.0.

11. The discharge from Outfall 003 containing constituents in excess or outside of the following limits is prohibited:

Constituent	Units	Limitation
pH	standard units	within 6.5 to 8.5
Temperature	°F	Daily maximum of 110
TOC	mg/l	Not greater than 5 above intake
Chlorine Residual	mg/L	Daily maximum of 0.0

12. The discharge from Outfall 004 containing constituents in excess or outside of the following limits is prohibited:

Constituent	Units	Limitation
pH	standard units	within 6.5 to 8.5
Oil & Grease	mg/l	daily maximum of 15
TOC	mg/l	daily maximum of 110
Visible oil	-	none observed
Visible color	-	none observed

13. **Effluent Limit Credit for Reclaimed Water Use:** If the Discharger begins to use reclaimed water, credit for influent concentrations of the constituents listed above, shall be granted in the discharge according to the following procedure provided the Discharger satisfies Provision D.4:

    a. The Discharger shall sample and analyze for constituents for which effluent limit credit is sought at least as frequently as is required in the attached Self-Monitoring Program for that constituent. Influent sampling shall occur at influent sampling station I-002 defined in the Self-Monitoring Program.

    b. The Discharger shall determine the time interval between introduction of a given constituent of concern in the influent reclaimed water and the first appearance of the constituent in the final effluent. This determination is subject to approval by the Executive Officer, and must precede any calculation of effluent limit credit for the constituent.

    c. Credit for constituents listed will be given on a mass and concentration basis.

    Concentration Credit

Influent concentration multiplied by total influent reclaimed water flow volume for that monitoring interval will yield an influent mass for each constituent, which is valid for that monitoring interval. After the appropriate time lag interval described in b. above, this influent mass of the constituent is divided by the total effluent flow volume for that monitoring period to give a concentration credit for the effluent that will apply for the monitoring interval. This concentration credit is added to the existing concentration limit. The monitoring interval is the time between sampling days. For example, weekly sampling yields a one week monitoring interval. A schematic example follows:

ex. Constituent B is monitored weekly. The lag time is Y days.

Step 1: (Influent conc. of B in reclaimed water) x (Total Influent Volume of Reclaimed Water for one week) = (Influent mass of B)

Step 2: (Influent mass of B) / (Total E-002 discharge volume for one week, Y days after influent week) = (Concentration credit for constituent B, valid for that one week period)

Step 3: (Concentration credit for constituent B) + (Effluent Limitation B.5 for constituent B) = Adjusted Effluent Limit for compliance determination, valid for that week.

Mass Credit

Influent concentration multiplied by total influent reclaimed water flow volume for that monitoring interval will yield an influent mass for each constituent, which is valid for that monitoring interval. After the appropriate time lag interval described in b. above, this influent mass of the constituent is then divided by the number of days in that monitoring period to give a mass credit for the effluent that will apply for the monitoring interval. This mass credit is added to the existing mass limit. The monitoring interval is the time between sampling days. For example, weekly sampling yields a one week monitoring interval. A schematic example follows:

ex. Constituent B is monitored weekly. The lag time is Y days.

Step 1: (Influent conc. of reclaimed water B) x (Total Influent Volume of Reclaimed Water for one week) = (Influent mass of B)

Step 2: (Influent mass of B) / (The Number of Days in that monitoring interval) = (Mass credit for constituent B, valid for that one week period)

Step 3: (Mass Credit for constituent B) + (Effluent Limitation B.6 or B.7 Mass Limit) = Adjusted Effluent Limit for compliance determination, valid for that week.

C. RECEIVING WATER LIMITATIONS

1. The discharges shall not cause the following conditions to exist in waters of the State at any place:

   a. Floating, suspended, or deposited macroscopic particulate matter or foam;

b. Bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses;

c. Alteration of temperature, turbidity, or apparent color beyond present natural background levels;

d. Visible, floating, suspended, or deposited oil or other products of petroleum origin; and

e. Toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on wildlife, waterfowl, or other aquatic biota, or which render any of these unfit for human consumption, either at levels created in the receiving waters or as a result of biological concentration.

2. The discharges shall not cause nuisance, or adversely affect the beneficial uses of the receiving water.

3. The discharges shall not cause the following limits to be exceeded in waters of the State at any one place within one foot of the water surface:

a. Dissolved Oxygen: 5.0 mg/L, minimum

The median dissolved oxygen concentration for any three consecutive months shall not be less than 80% of the dissolved oxygen content at saturation. When natural factors cause concentrations less than that specified above, then the discharges shall not cause further reduction in ambient dissolved oxygen concentrations.

b. Dissolved Sulfide: 0.1 mg/L, maximum

c. pH: The pH shall not be depressed below 6.5 nor raised above 8.5, nor caused to vary from normal ambient pH by more than 0.5 pH units.

d. Un-ionized Ammonia: 0.025 mg/L as N, annual median; and
0.16 mg/L as N, maximum.

e. Nutrients: Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.

4. The discharges shall not cause a violation of any particular water quality standard for receiving waters adopted by the Board or the SWRCB as required by the Clean Water Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Clean Water Act, or amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.

D. PROVISIONS

1. **Permit Compliance and Rescission of Previous Waste Discharge Requirements**
Requirements prescribed by this Order supersede the requirements prescribed by Order No. 00-015. Order No. 00-015 is hereby rescinded upon the effective date of this permit. This Order shall serve as a National Pollutant Discharge Elimination System (NPDES) permit pursuant to Section 402 of the Clean Water Act or amendments thereto, and shall become effective on September 1, 2005, provided

the USEPA Regional Administrator has no objection. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

2. **Toxic Pollutant Limits at E-003**
Within two years of the effective date of this Order, the Discharger shall submit a technical report that proposes effluent limits for pollutants that exhibit reasonable potential (at this time, this includes arsenic, selenium, lead, dioxin (TCDD Equivalents), copper, nickel, zinc, 4,4-DDE, and dieldrin) at outfall 003. Following Board approval through a permit modification, these limits shall become effective.

3. **Copper, Nickel, and Zinc E-003 Reductions**
Within 90 days of the effective date of this Order, the Discharger shall submit a technical report that, at a minimum, includes the shortest practicable schedule for (a) upgrading saltwater cooling system metallurgy (e.g., pumps, heat exchangers, and strainers) from brass, bronze, and copper-containing alloys to more corrosion resistant alloys such as titanium; and (b) phasing-out zinc based cathodic protection.

4. **Mass and Concentration Credits**
Prior to obtaining mass or concentration credits for using reclaimed water, the Discharger shall submit a technical report that demonstrates such credits will not cause acute toxicity in the vicinity of its discharge. The demonstration shall include, but not be limited to an assessment of the results of whole effluent toxicity and the resultant concentrations of acutely toxic compounds relative to acute criteria. Following written approval of the technical report from the Executive Officer, this provision shall be considered satisfied.

5. **Storm Water Pollution Prevention Plan and Annual Report**
The Discharger shall update and submit an updated Storm Water Pollution Prevention Plan (SWPPP) acceptable to the Executive Officer by September 1st of each year. If the Discharger determines that it does not need to update its SWPPP, it shall submit a letter to the Executive Officer that indicates no revisions are necessary and the last year it updated its SWPPP. The Discharger shall implement the SWPPP and the SWPPP shall comply with the requirements contained in the attached Standard provisions.

The Discharger shall also submit an annual storm water report by July 1 of each year covering data for the previous wet weather season for E-004. The annual storm water report shall, at a minimum, include: (a) a tabulated summary of all sampling results and a summary of visual observations taken during the inspections; (b) a comprehensive discussion of the compliance record and any corrective actions taken or planned to ensure compliance with waste discharge requirements; and (c) a comprehensive discussion of source identification and control programs for constituents that do not have effluent limitations (e.g., total suspended solids).

6. **Effluent Characterization for Selected Constituents**
The Discharger shall monitor and evaluate the discharge from Outfall E-002 for the constituents listed in Enclosure A of the Board's August 6, 2001 Letter. Compliance with this requirement shall be achieved in accordance with the specifications stated in the Board's August 6, 2001 Letter under Effluent Monitoring for Major Dischargers. The Discharger shall conduct monitoring as specified in the table below:

Constituent type	Sampling Frequency	EPA/SM Method Number
Metals	As specified in SMP (for those not specified in SMP, Semiannual)	As specified in August 6, 2001, letter or SMP
Volatiles	Semiannual	EPA 601 or 624
Semi-volatiles	Semiannual	EPA 604 or 625
Pesticides	Semiannual	EPA 608
PAHs	As specified in SMP	EPA 610
Dioxin and Furans	As specified in SMP	EPA 1613
Total Solids	Semiannual concurrent with dioxin and furans monitoring	SM 2540B
Tributyltin	Semiannual	Batelle N-0959-2606
Diazinon	Semiannual	EPA 614

This information shall be included with the annual report required by Part A of the Self-Monitoring Program. The first annual report under this Order is due March 1, 2006. The report shall summarize the data collected to date and describe future monitoring to take place. A final report that presents all the data shall be submitted to the Board no later than 180 days prior to the permit expiration date. This final report shall be submitted with the application for permit reissuance. Reporting requirements under this section may be satisfied by: (a) monthly reporting using the electronic reporting system (ERS), or an equivalent electronic system required by the Board or State Board, and (b) submittal of a complete application for permit reissuance no later than 180 days prior to the permit expiration date.

7. **Receiving Water Monitoring**

The Discharger shall continue to collect or participate in collecting background ambient receiving water data with other Dischargers and/or through the RMP. This information is required to perform RPAs and to calculate effluent limitations. To fulfill this requirement, the Discharger shall submit (or cause to have submitted on its behalf) data sufficient to characterize the concentration of each toxic pollutant listed in the CTR in the ambient receiving water. The data on the conventional water quality parameters (pH, salinity, and hardness) shall also be sufficient to characterize these parameters in the ambient receiving water at a point after the discharge has mixed with the receiving waters.

The sampling frequency and sampling station locations shall be specified in the sampling plan. The frequency of the monitoring shall consider the seasonal variability of the receiving water. It would be acceptable to select stations representative of incoming ocean waters because the combined effluent discharges to the Bay through deepwater diffusers.

8. **Pollution Prevention and Minimization Program (PMP)**

a. The Discharger shall conduct a Pollution Minimization Program to reduce pollutant loadings of copper, mercury, selenium, cyanide, 4,4'DDE, Dieldrin, PCBs, dioxin-TEQ to the treatment plant and therefore to the receiving waters.

b. The Discharger shall submit an annual report, acceptable to the Executive Officer, no later than March 1 of each year. Annual reports shall cover January through December of the preceding year. Annual reports shall include at least the following information:

i. *A brief description of its treatment facilities and treatment processes.*

ii. *A discussion of the current pollutants of concern.* Periodically, the Discharger shall analyze its own situation to determine which pollutants are currently a problem and/or which pollutants

may be potential future problems. This discussion shall include the reasons why the pollutants were chosen.

iii. *Identification of sources for the pollutants of concern.* This discussion shall include how the Discharger intends to estimate and identify sources of the pollutants. The Discharger shall also identify sources or potential sources not directly within the ability or authority of the Discharger to control, such as pollutants in the potable water supply and air deposition.

iv. *Identification of tasks to reduce the sources of the pollutants of concern.* This discussion shall identify and prioritize tasks to address the Discharger's pollutants of concern. The Discharger may implement tasks itself or participate in group, regional, or national tasks that will address its pollutants of concern. The Discharger is strongly encouraged to participate in group, regional, or national tasks that will address its pollutants of concern whenever it is efficient and appropriate to do so. A time-line shall be included for the implementation of each task.

v. *Outreach to employees.* The Discharger shall inform employees about the pollutants of concern, potential sources, and how they might be able to help reduce the discharge of these pollutants of concern into the treatment facilities. The Discharger may provide a forum for employees to provide input to the Program.

vi. *Discussion of criteria used to measure the program's and tasks' effectiveness.* The Discharger shall establish criteria to evaluate the effectiveness of its Pollution Minimization Program. This shall also include a discussion of the specific criteria used to measure the effectiveness of each of the tasks in item b. (iii), b. (iv), and b. (v).

vii. *Documentation of efforts and progress.* This discussion shall detail all the Discharger's activities in the Pollution Minimization Program during the reporting year.

viii. *Evaluation of program's and tasks' effectiveness.* The Discharger shall use the criteria established in b. (vi) to evaluate the Program's and tasks' effectiveness.

ix. *Identification of Specific Tasks and Time Schedules for Future Efforts.* Based on the evaluation, the Discharger shall detail how it intends to continue or change its tasks to more effectively reduce the amount of pollutants to the treatment facilities, and subsequently in its effluent.

c. According to Section 2.4.5 of the SIP, when there is evidence that a priority pollutant is present in the effluent above an effluent limitation and either:

i. A sample result is reported as detected, but not quantified (less than the ML) and the effluent limitation is less than the reported ML; or

ii. A sample result is reported as not detected (less than the MDL) and the effluent limitation is less than the MDL;

The Discharger shall expand its existing Pollution Minimization Program to include the reportable priority pollutant. A priority pollutant becomes a reportable priority pollutant (1) when there is evidence that it is present in the effluent above an effluent limitation and either (c)(i), or c(ii) is triggered or (2) if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reported ML.

d. If triggered by the reasons in c. above and notified by the Executive Officer, the Discharger's Pollution Minimization Program shall, within 6 months, also include the following:

i. An annual review and semiannual monitoring of potential sources of the reportable priority pollutant(s), which may include fish tissue monitoring and other bio-uptake sampling, or

alternative measures approved by the Executive Officer when it is demonstrated that source monitoring is unlikely to produce useful analytical data.

ii. Quarterly monitoring for the reportable priority pollutant(s) in the influent to the wastewater treatment system, or alternative measures approved by the Executive Officer when it is demonstrated that influent monitoring is unlikely to produce useful analytical data.

iii. Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutant(s) in the effluent at or below the effluent limitation.

iv. Development of appropriate cost-effective control measures for the reportable priority pollutant(s), consistent with the control strategy.

v. An annual status report that shall be sent to the Board including the following:
(1) All Pollution Minimization Program monitoring results for the previous year
(2) A list of potential sources of the reportable priority pollutant(s)
(3) A summary of all actions undertaken pursuant to the control strategy
(4) A description of actions to be taken in the following year.

e. To the extent that the requirements of the Pollution Prevention Program and the Pollutant Minimization Program overlap, the Discharger is allowed to continue, modify, or expand its Pollution Prevention Program to satisfy the Pollutant Minimization Program requirements.

f. These Pollution Prevention/Pollutant Minimization Program requirements are not intended to fulfill the requirements in the Clean Water Enforcement and Pollution Prevention Act of 1999 (Senate Bill 709).

9. **Thermal Plume Monitoring**
To determine the extent of the impact on aquatic life found in the previous study on thermal discharges from E-003, the Discharger shall:

Task	Due Date
Propose a Study that, at a minimum, includes monitoring and an implementation schedule	Within 90 days of the effective date of this Order
Conduct Study	In accordance with the schedule approved by the Executive Officer
Submit Final Report	In accordance with the date approved by the Executive Officer

In submitting the proposed study, the Discharger shall also send copies to the California Department of Fish & Game, and National Oceanic and Atmospheric Administration – National Marine Fisheries Service. This study proposal is subject to the written approval of the Executive Officer.

10. **Impingement and Entrainment Study at I-001**
In order to demonstrate that the submerged cylindrical wedgewire screens currently installed on the salt water intake structure (I-001) comply with USEPA technology to reduce impingement and entrainment of aquatic organisms, the Discharger shall:

Task	Due Date
Submit a Technology Installation and Operation Plan that documents that the technology was	Within 60 days of the effective date of this Order

Task	Due Date
installed in accordance with the Manufacturer's requirements, and proposes how it will evaluate the effectiveness of installed technology. And evaluate the feasibility of installing cooling towers to eliminate the need for its once-through cooling water system.	
Conduct Evaluation and submit progress reports in its Annual Self-Monitoring Report	In accordance with the schedule approved by the Executive Officer

In submitting this technical report, the Discharger shall also send copies to the California Department of Fish & Game, and National Oceanic and Atmospheric Administration – National Marine Fisheries Service. The technical report is subject to the written approval of the Executive Officer.

Toxicity Requirements

11. **Whole Effluent Acute Toxicity**
Compliance with acute toxicity requirements of this Order shall be achieved in accordance with the following:

a. From permit adoption date:
(1) Compliance with the acute toxicity effluent limits of this Order shall be evaluated by measuring survival of test organisms exposed to 96-hour flow through bioassays.
(2) Test organism shall be rainbow trout unless specified otherwise in writing by the Executive Officer.
(3) All bioassays shall be performed according to 40 CFR 136, currently the "Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms,"5th Edition. Exceptions may be granted to the Discharger by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP).

12. **Chronic Toxicity**
Consistent with the Basin Plan's specified approach for dischargers monitoring chronic toxicity on a semiannual basis, the Discharger shall comply with the following tiered approach with trigger values to ensure that potential chronic toxicity is addressed in a timely fashion:

a. The Discharger shall conduct routine chronic toxicity monitoring in accordance with the SMP of this Order.

b. If data from routine monitoring exceeds the evaluation parameter in 12.c. below, then the Discharger shall conduct accelerated chronic toxicity monitoring. Accelerated monitoring shall consist of monthly monitoring.

c. Chronic toxicity evaluation parameter is as follows:

i. A single sample maximum value of 10 TU_c.
ii. This parameter is defined as follows:
(1) TU_c (chronic toxicity unit): A TU_c equals 100/NOEL (e.g., if NOEL = 100, then toxicity = 1 TUc). NOEL is the no-observed effect level determined from IC, EC, or NOEC values.
(2) The terms IC, EC, NOEL and NOEC and their use are defined in Attachment A of the SMP.

d. If data from accelerated monitoring tests are found to be in compliance with the evaluation parameter, then routine monitoring shall be resumed.

e. If accelerated monitoring tests continue to exceed the evaluation parameter (i.e., any two consecutive tests > 10 TU_c), then the Discharger shall initiate a chronic TRE.

f. The TRE shall be conducted in accordance with the following:

i. The Discharger shall prepare and submit to the Board for Executive Officer approval a TRE workplan. An initial generic workplan shall be submitted within 120 days of the date of adoption of this Order. The workplan shall be reviewed and updated as necessary in order to remain current and applicable to the discharge and discharge facilities.

ii. The TRE shall be initiated within 30 days of the date of completion of the accelerated monitoring test observed to exceed either evaluation parameter.

iii. The TRE shall be conducted in accordance with an approved workplan.

iv. The TRE needs to be specific to the discharge and Discharger facility, and may be in accordance with current technical guidance and reference materials including USEPA guidance materials. The TRE should be conducted as a tiered evaluation process, such as summarized below:

(1) Tier 1 consists of basic data collection (routine and accelerated monitoring).
(2) Tier 2 consists of evaluation of optimization of the treatment process including operation practices, and in-plant process chemicals.
(3) Tier 3 consists of a toxicity identification evaluation (TIE).
(4) Tier 4 consists of an evaluation of options for additional effluent treatment processes.
(5) Tier 5 consists of an evaluation of options for modifications of in-plant treatment processes.
(6) Tier 6 consists of implementation of selected toxicity control measures, as well as follow-up monitoring and confirmation of implementation success.

v. The TRE may be ended at any stage if monitoring finds there is no longer consistent toxicity.

vi. The objective of the TIE shall be to identify the substance or combination of substances causing the observed toxicity. All reasonable efforts using currently available TIE methodologies should be employed.

vii. As toxic substances are identified or characterized, the Discharger shall continue the TRE by determining the source(s) and evaluating alternative strategies for reducing or eliminating the substances from the discharge. All reasonable steps shall be taken to reduce toxicity to levels consistent with chronic toxicity evaluation parameters.

viii. Many recommended TRE elements parallel required or recommended efforts of source control, pollution prevention, and storm water control programs. TRE efforts should be coordinated with such efforts. To prevent duplication of efforts, evidence of compliance with requirements or recommended efforts of such programs may be acceptable to comply with TRE requirements.

ix. The Board recognizes that chronic toxicity may be episodic and identification of the causes and reduction of sources of chronic toxicity may not be successful in all cases. Consideration of enforcement action by the Board will be based in part on the Discharger's actions and efforts to identify and control or reduce sources of consistent toxicity.

g. Chronic Toxicity Monitoring Screening Phase Requirements, Critical Life Stage Toxicity Tests, and definitions of terms used in the chronic toxicity monitoring are identified in Attachment A of the SMP. The Discharger shall comply with these requirements as applicable to the discharge.

13. **Optional Mass Offset**
The Discharger may submit to the Board for approval a mass offset plan to reduce 303(d) listed pollutants to the same watershed or drainage basin. The Board may modify this Order to allow an approved mass offset program.

14. **Contingency Plan Update**
a. The Discharger shall maintain a Contingency Plan as required by Board Resolution 74-10 (attached), and as prudent in accordance with current industrial facility emergency planning. The discharge of pollutants in violation of this Order where the Discharger has failed to develop and/or adequately implement a contingency plan will be the basis for considering such discharge a willful and negligent violation of this Order pursuant to Section 13387 of the California Water Code.

b. The Discharger shall regularly review, and update as necessary, the Contingency Plan in order for the plan to remain useful and relevant to current equipment and operation practices. Reviews shall be conducted annually, and updates shall be completed as necessary.

c. The Discharger shall provide the Executive Officer, upon his or her request, a report describing the current status of its Contingency Plan review and update. The Discharger shall also include, in each Annual Self-Monitoring Report, a description or summary of review and evaluation procedures, and applicable changes to its Contingency Plan.

15. **Self-Monitoring Program** The Discharger shall comply with the Self-Monitoring Program (SMP) for this Order as adopted by the Board. The SMP may be amended by the Executive Officer pursuant to USEPA regulations 40 CFR 122.62, 122.63, and 124.5.

16. **Standard Provisions and Reporting Requirements**
The Discharger shall comply with all applicable items of the Standard Provisions and Reporting Requirements for NPDES Surface Water Discharge Permits, August 1993 (attached), or any amendments thereafter. Where provisions or reporting requirements specified in this Order are different from equivalent or related provisions or reporting requirements given in 'Standard Provisions', the specifications of this Order shall apply.

17. **Change in Control or Ownership**
a. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Board.
b. To assume responsibility of and operations under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order (see Standard Provisions & Reporting Requirements, August 1993, Section E.4.). Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code.

18. **Permit Reopener**
The Board may modify or reopen this Order and Permit prior to its expiration date in any of the following circumstances:
(1) If present or future investigations demonstrate that the discharge(s) governed by this Order and Permit will or have a reasonable potential to cause or contribute to adverse impacts on water quality and/or beneficial uses of the receiving waters;

(2) New or revised WQOs come into effect for the San Francisco Bay estuary and contiguous water bodies (whether statewide, regional, or site-specific). In such cases, effluent limitations in this permit will be modified as necessary to reflect updated WQOs. Adoption of effluent limitations contained in this Order and Permit is not intended to restrict in any way future modifications based on legally adopted WQOs or as otherwise permitted under Federal regulations governing NPDES permit modifications;

(3) If translator or other water quality studies provide a basis for determining that a permit condition(s) should be modified. The Discharger may request permit modification on this basis. The Discharger shall include in any such request an antidegradation and antibacksliding analysis.

19. **Order Expiration and Reapplication**

a. This Order expires on August 31, 2010.

b. In accordance with Title 23, Chapter 3, Subchapter 9 of the California Administrative Code, the Discharger must file a report of waste discharge no later than 180 days before the expiration date of this Order as application for reissue of this permit and waste discharge requirements. The application shall be accompanied by a summary of all available water quality data, including conventional pollutant data from no less than the most recent three years, and of toxic pollutant data from no less than from the most recent five years, in the discharge and receiving water. Additionally, the Discharger must include with the application the final results of any studies that may have bearing on the limits and requirements of the next permit. Such studies include dilution studies, translator studies, and alternate bacteria indicator studies.

I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on June 15, 2005.

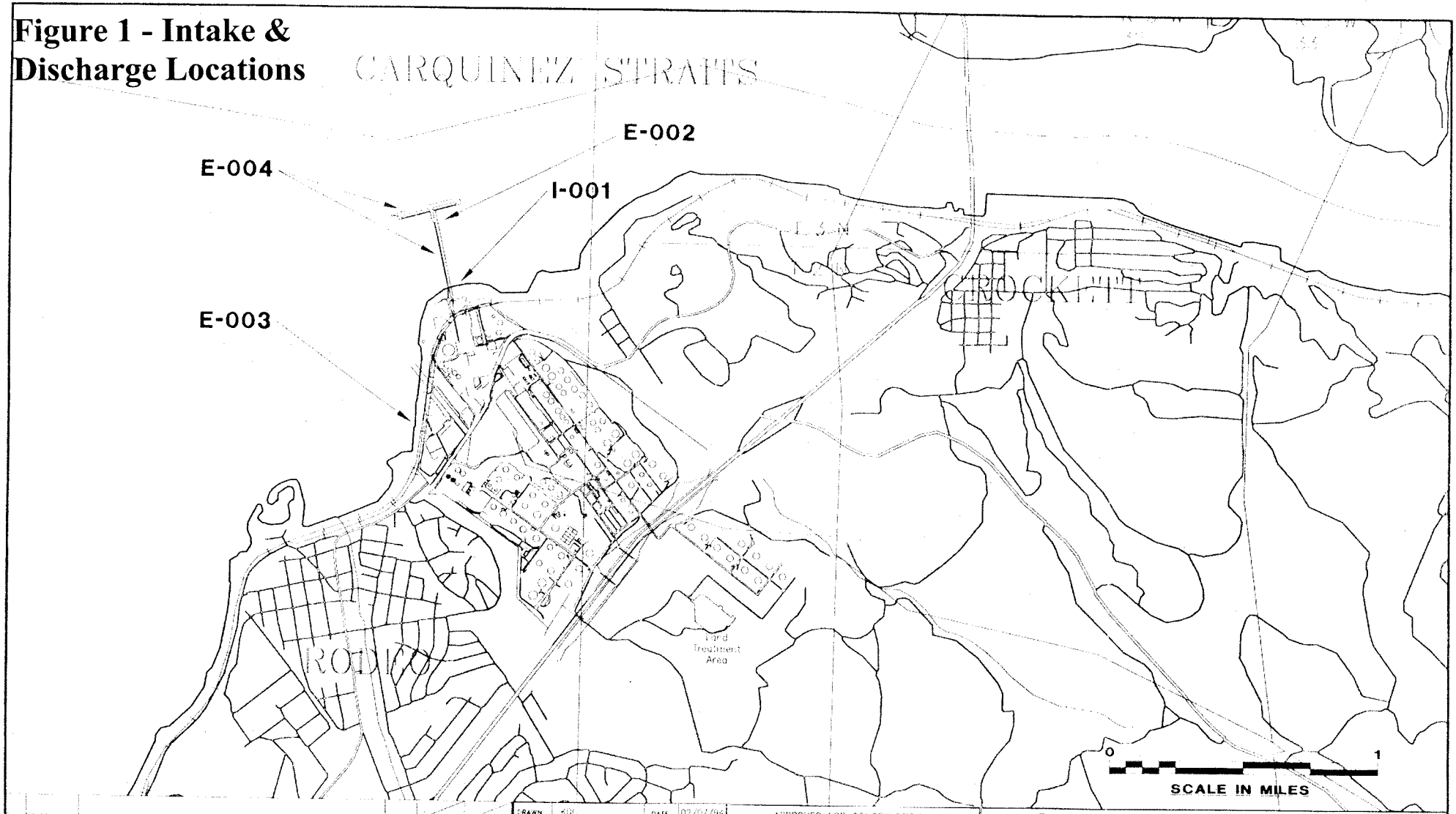
BRUCE H. WOLFE
Executive Officer

Attachments:

A. Discharge Facility Location Map
B. Discharge Facility Treatment Process Diagram
C. Self-Monitoring Program, Part B
D. Fact Sheet
E. The following documents are part of this Order, but are not physically attached due to volume. They are available on the Internet at: http://www.waterboards.ca.gov/sanfranciscobay/Download.htm
   - Self-Monitoring Program, Part A
   - Standard Provisions and Reporting Requirements, August 1993
   - Board Resolution No. 74-10
   - Mercury Staff Report

ATTACHMENT A

Figure 1 - Intake & Discharge Locations



REV	DATE	DESCRIPTION	SEE NO.	BY	APPD CHKD	DATE
3	08/27/04	REMOVED E-001 OUTFALL, CHANGED DWG NO. FROM NPDES 04		VGB		
2	02/02/03	ADDED LAND TREATMENT AREA NOTATION		HMW		
1	05/22/99	ADDED E-004 OUTFALL		MJR		
0	02/07/94	ISSUED		KDL		

DRAWN	KDL	DATE	02/07/94
DESIGN		DATE	
CHECK		DATE	
APP'D		DATE	
EQUIPMENT NOS.			
UNIT NO. 9X		ACAD NO.	SFRP0401

APPROVED FOR CONSTRUCTION

PROJECT NO.	DATE	PROJECT ENG.
SCALE:	AS NOTED	

SAN FRANCISCO AREA REFINERY
IN RODEO
NPDES INTAKE & OUTFALL SITES

ConocoPhillips
San Francisco Refinery

DRAWING NUMBER	REV
SFR-YP-004-001	3
SHEET 1 OF 1	

ATTACHMENT B

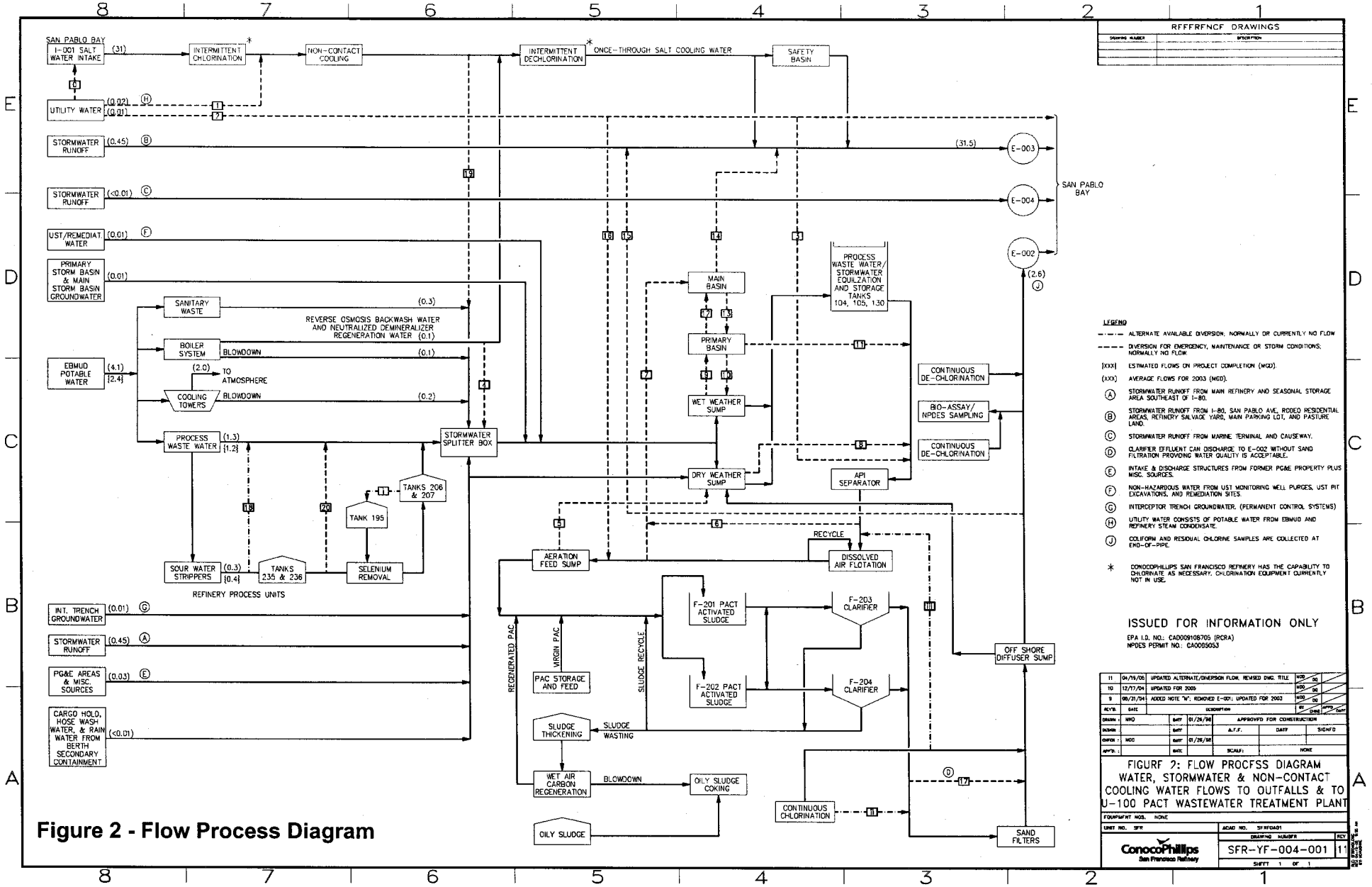


Figure 2 - Flow Process Diagram

FIGURE 2: FLOW PROCESS DIAGRAM – TABLE 1 (DIVERSION SUMMARY)

Diversion for emergency, maintenance or storm conditions – normally no flow

	From	Conditions	Annual Freq.	Est. & Design Flows (gpm)		To
0	Utility Water System	Periodic cleaning of SWIS screens	52	125	none	San Pablo Bay
1		Saltwater pump failure or maintenance (supplemental cooling)	0 - 3	250-750		E-003
2		MTC fire monitor testing	0 - 100	500		San Pablo Bay
		MTC fire hydrant flow testing	0 - 50	250		
		Wash off boom boat	0 - 50	25		
		Condensate drips from lines @ MTC	ongoing	0.005		
		Algae removal from boat launch ramp	0 - 2	10		
3	SSW	Utility Carrier Water for pH control	As needed	30-50	none	API inlet
4	Neut. demin. backwash	Line plugged, value failure @ U240 / SPP, or salt water outage	0 - 1	0 250	none	Sewer System
5	Aeration feed sump	AFS pump failure or HC contamination	0 - 4	~2,000	~7,500	DWS
6	API out	DAF Failure	Never used	~2,000	~7,500	Main Basin
7	DAF out	Equalization Tanks full with no discharge to the Bay	Never used	~2,000	~7,500	Main Basin
8	DWS	Line to equalization tanks is not available / out of service	Never used	~2,000	3,600	API In
9	WWS	EQ tanks full, rainfall > pumping capacity, power outage or WWS pump / level control failure	0 - 1	~100,000	~100,000	Primary Basin
10	Primary Basin	Pump out Primary Basin after diversion (gravity flow)	0 - 1	15-72,000	72,000	WWS
11		Return line to WWS not available / out of service	Never used	~5,000	~5,000	API In
12		Primary Basin is full – overflow to Main Basin	1/10	~100,000	~100,000	Main Basin
13	Main Basin	Pump out Main Basin after diversion (gravity drain)	1/ 10	0-1,600	1,600	Primary Basin
14		Main Basin is full – overflowing to safety Basin	1/25	~100,000	~100,000	Safety Basin
15	OSD Line	OSD Line failure – U100 discharge bypassed to E-003	Never used	~2,000	~7,500	E003
16	Utility Water	Hi-temperature control to prevent Bio-plant failure	0 - 3	500	none	Aeration Sump
17	Clarifier out	Providing water quality is acceptable	0 - 2	~5,000	~7500	OSD sump
18	SW Strippers	Wastewater does not require treatment @ SRP	0 - 1	0 - 150	none	Sewer System
19	Saltwater dist. system	Maintenance or equipment failure	0 - 5	0 - 100	none	Sewer System
20	Tanks 235 / 236	Wastewater does not require treatment @ SRP	0 - 1	0 - 150	none	Sewer System

Alternate available diversion - normally or currently no flow

	From	Conditions	Annual Freq.	Est. & Design Flows (gpm)		To
i	Tanks 206 / 207	Off spec proving tank (Se or Cu)	0 - 2	500	500	Tank 195
ii	Metered hypochlorite	Degrease / clean media	0 - 4	metered flow	65	Media filters
iii		H2S control in DAF / supplemental disinfection	TBD	TBD	TBD	DAF Inlet

ATTACHMENT C

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM

FOR

CONOCOPHILLIPS
RODEO, CONTRA COSTA COUNTY

NPDES PERMIT NO. CA0005053

ORDER NO. R2-2005-0030

Consists of:
Part A (not attached)
Adopted August 1993

and

Part B (Attached)
Adopted: June 15, 2005
Effective: September 1, 2005

Note: Part A (dated August 1993) and Standard Provisions and Reporting Requirements for NPDES Surface Water Discharger Permits (dated August 1993) referenced in this Self Monitoring Program are not attached but are available for review or download on the Board's website at www.waterboards.ca.gov/sanfranciscobay/

SELF-MONITORING PROGRAM – Part B

I. Description of Sampling and Observation Stations

A. EFFLUENT

Station	Description
E-002	At any point in the outfall from the treatment facilities to the discharge point, at which all wastewaters tributary to the outfall are present.
E-003a	At any point in the Waste 003 outfall between the point of discharge and the point where all wastes tributary thereto are present such that the sample is representative of once-through cooling water.
E-003b	At any point in the Waste 003 outfall that includes neutralized demineralizer wastewaters but does not include the inflow of stormwater runoff for the purpose of priority pollutant monitoring.
E-004	At a point in each the three source areas (may be composited) resulting in the discharge of Waste 004, not more than 5 feet from the point(s) of discharge. Exact sampling point for each discharge area should be determined onsite.

B. INFLUENT

Station	Description
I-001	At any point in the saltwater pump intake that delivers San Pablo Bay water to the Refinery, prior to any treatment or use for cooling or processing.
I-002	At any point in the pipe which delivers only reclaimed water to the facility, but upstream of any water treatment unit, blending point, or point of use.

C. RECEIVING WATER

Station	Description
C-R-3	At a point in San Pablo Bay, located not more than 1,000 feet west of Outfall E-003, where representative ambient temperature and water quality of the receiving water can be measured.
C-2	At a point in San Pablo Bay, located no more than 200 feet over the geometric center of the deepwater diffusers for Waste 002.

D. RAINFALL

Station	Description

R-1 The nearest official National Weather Service rainfall station, the Discharger's Laboratory rain gauge, or other station acceptable to the Executive Officer.

II. SCHEDULE OF SAMPLING, MEASUREMENTS, AND ANALYSIS

The schedule of sampling, analysis and observation shall be that given in the tables below.

TABLE 1A - SCHEDULE of SAMPLING, ANALYSES and OBSERVATIONS [1]

Sampling Station:			I-001	E-003	E-002	
Type of Sample:			G	G	G	C-24
Parameter	Units	**Notes**			[1]	[8]
Flow Rate	MGD	[2]	Cont/D	Cont/D		Cont/D
pH	s.u.			M		Cont
Temperature	°F			Cont		Cont
TOC	mg/L		W	W		
Chlorine residual	mg/L			[16]	D	
Total Coliform	MPN/100mL				W	
BOD	mg/L lb/day					M
COD	mg/L lb/day					M
TSS	mg/L lb/day					M
Oil & Grease	mg/L lb/day	[3,4]				M
Total Phenols	mg/L lb/day				M	
Chromium (total)	µg/L lb/day	[14]				M
Chromium (VI)	µg/L lb/day					M
Settleable Matter	ml/l-hr	[4]			M	
Sulfides	mg/L lb/day	[4]			M	
Ammonia N	mg/L lb/day				M	
Acute Toxicity	% Survival	[5]				W
Chronic Toxicity		[6]				2/Y
Arsenic	µg/L		M	M		
Zinc	µg/L		M	M		
Copper	µg/L		M	M		W
Lead	µg/L		M	M		M
Mercury	µg/L	[7]			M	M
Nickel	µg/L		M	M		M
Selenium	µg/L	[9]	M	M		W
Cyanide	µg/L	[10]			M	
Chlorodibromomethane	µg/L				2/Y	
Dichlorobromomethane	µg/L				2/Y	

Sampling Station:			I-001	E-003	E-002	
Type of Sample:			G	G	G	C-24
Parameter	Units	Notes			[1]	[8]
Dieldrin	µg/L		2/Y	2/Y	2/Y	
4,4'-DDE	µg/L		2/Y	2/Y	2/Y	
Benzo(a)Anthracene	µg/L	[11]			2/Y	
Benzo(a)Pyrene	µg/L	[11]			2/Y	
Benzo(b)Fluoranthene	µg/L	[11]			2/Y	
Benzo(k)Fluoranthene	µg/L	[11]			2/Y	
Chrysene	µg/L	[11]			2/Y	
Dibenzo(a,h)Anthracene	µg/L	[11]			2/Y	
Indeno(1,2,3-cd)Pyrene	µg/L	[11]			2/Y	
PCBs	µg/L	[4,12]			2/Y	
2,3,7,8-TCDD and congeners	pg/l	[13]	2/Y	2/Y	2/Y	
Aluminum	µg/L	[15]				M
Standard Observations	Daily	[17]		D		D

Table 1-B Stormwater

Sampling Station		E-004
Type of Sample		G
Parameter	Units	[1]
Oil & Grease	mg/l	At least twice/year
TOC	mg/l	At least twice/year
TPH	mg/L	When TOC is detected
TSS	mg/l	At least twice/year
Specific Conductance	µmhos/cm	At least twice/year
pH	s.u	At least twice/year

[1] Stormwater sampling shall be collected at the frequency specified in Self-Monitoring Program, Part A – Section C.3

Table 1-C Receiving Water

Sampling Station		CR-3	C-2
Type of Sample		G	G
Parameter	Units		
Temperature	°F	Q	Q
pH	s.u.	Q	Q
Dissolved Oxygen	mg/l	Q	Q
Sulfides	mg/l	Q	Q
Unionized Ammonia	mg/l	Q	Q
Salinity	ppt	Q	Q
Hardness	mg/L	Q	Q
Standard Observations		Q	Q

LEGEND FOR TABLE 1

Types of Samples:

C-24= composite sample, 24 hours (includes continuous sampling, such as for flows)
G= grab sample
O= observation

Frequency of Sampling:
Cont. = continuous
Cont/D = continuous monitoring & daily reporting
M = once each month
W = once each week
Y = once each calendar year
2/Y = Two times a year, one in wet season, one in dry season.
Q = once each calendar quarter (with at least two-month intervals)

Parameter and Unit Abbreviations:
BOD_5 20°C = Biochemical Oxygen Demand, 5-day, at 20°C
COD = Chemical Oxygen Demand
TSS = Total Suspended Solids
MGD = million gallons per day
mg/L = milligrams per liter
ml/L-hr = milliliters per liter, per hour
µg/L= micrograms per liter
pg/L = picograms per liter
kg/day = kilograms per day
kg/mo = kilograms per month
TOC = Total Organic Carbon

FOOTNOTES FOR TABLE 1

[1] Indicates sampling is required during the entire year. The Discharger shall use approved USEPA Methods with the lowest Minimum Levels specified in the SIP and described in footnote 4 of Effluent Limitations B.5, and in the August 6, 2001, letter.

[2] Flow Monitoring: Effluent flow shall be measured continuously at Outfall 002 and 003, and recorded daily. For effluent flows, the following information shall also be reported, monthly:

Daily Flow (MG)
Average Daily Flow (MGD)
Maximum Daily Flow (MGD)
Minimum Daily Flow (MGD)
Total Flow Volume (MG)

Reporting requirements under this section may be satisfied by monthly reporting using the electronic reporting system (ERS), or an equivalent electronic system required by the Board or State Board.

[3] Oil & Grease Monitoring.
Each Oil & Grease sample event shall consist of a composite sample comprised of three grab samples taken at equal intervals during the sampling date, with each grab sample being collected in a glass container. Each glass container used for sample collection or mixing shall be thoroughly rinsed with solvent rinsing as soon as possible after use, and the solvent rinsing shall be added to the composite sample for extraction and analysis.

[4] Grab Samples shall be collected coincident with composite samples collected for the analysis of regulated parameters.

[5] Bioassays: Bioassays: Monitoring of the bioassay water shall include, on a daily basis, the parameters specified in the USEPA-approved method, such as pH, dissolved oxygen, ammonia nitrogen, and temperature. These results shall be kept onsite, and made available upon request. If the fish survival rate in the effluent is less than 70 percent or if the control fish survival rate is less than 90 percent, the bioassay test shall be restarted as soon as practicable with new fish and shall continue back to back until compliance is demonstrated. Test species shall be rainbow trout.

[6] A Critical Life Stage Toxicity Test shall be performed and reported in accordance with the Chronic Toxicity Requirements specified in Sections V and VI of the SMP contained in this Order.

[7] The Discharger may, at its option, sample effluent mercury either as grab or as 24-hour composite samples. Use ultra-clean sampling (USEPA 1669) to the maximum extent practicable and ultra-clean analytical methods (USEPA 1631) for mercury monitoring. The Discharger may use alternative methods of analysis (such as USEPA 245), if that alternative method has an ML of 2 ng/L or less.

[8] Composite sampling: 24-hour composites may be made up of discrete grabs collected over the course of a day and volumetrically or mathematically flow-weighted. Samples for inorganic pollutants maybe combined prior to analysis. Samples for organic pollutants should be analyzed separately. Samples shall be taken on random weekdays.

[9] Selenium must be analyzed for by ICP/MS, or the atomic absorption gaseous hydride procedure (USEPA Method No. 200.8, or Standard Method No. 3114B or 3114C).

[10] The Discharger may, at their option, analyze for cyanide as Weak Acid Dissociable Cyanide using protocols specified in Standard Method Part 4500-CN-I, USEPA Method OI 1677, or equivalent alternatives in latest edition. Alternative methods of analysis must be approved by the Executive Officer.

[11] The latest versions of USEPA Methods 624 (or 8240), and 625 (or 8270) shall be used.

[12] The latest versions of USEPA Methods 608 (or 8080) shall be used to determine compliance with the limits for Total PCBs. The Discharger shall attempt to achieve the lowest detection limits commercially available using this method and shall instruct its lab to calibrate to the minimum level indicated in footnote 4 of Effluent Limitation B.5:

[13] Chlorinated dibenzodioxins and chlorinated dibenzofurans shall be analyzed using the latest version of USEPA Method 1613; the analysis shall be capable of achieving one-half of the USEPA MLs and the Discharger shall collect 4-liter samples to lower the detection limits to the greatest extent practicable. Alternative methods of analysis must be approved by the Executive Officer.

[14] The Discharger may, at its option, comply with the limits for hexavalent chromium by using total chromium results. In this case, analysis for hexavalent chromium is waived.

[15] The Discharger shall monitor for both total and acid soluble aluminum.

[16] The Discharger shall monitor for chlorine residual at E-003 every 2 hours if chlorination of intake occurs.

[17] The standard observations for E-003 shall be conducted as specified in Self-Monitoring Program, Part A, Section D.1 – Receiving Water.

III. Modification of Self-Monitoring Program, Part A (Part A):

A. If any discrepancies exist between Part A and Part B of the SMP, Part B prevails.

B. Section C.5. is satisfied by participation in the Regional Monitoring Program.

C. Modify Section F.1, first paragraph, as follows:

Spill Reports

A report shall be made of any spill of oil or other hazardous material to waters of the State. The spill shall be reported by telephone as soon as possible and no later than 24 hours following occurrence or discharger's knowledge of occurrence. Spills shall be reported by telephone as follows:

During weekdays, during office hours of 8 am to 5 pm, to the Regional Board:
Current telephone number: (510) 622-2369, (510) 622-2460 (FAX).

During non-office hours, to the State Office of Emergency Services:

Current telephone number: (800) 852-7550.

A report shall be submitted to the Board within five (5) working days following telephone notification, unless directed otherwise by Board staff. A report submitted by facsimile transmission is acceptable for this reporting. The written report shall contain information relative to: ...

D. Modify Section F.2, first paragraph, as follows:

Reports of Plant Bypass, Treatment Unit Bypass and Permit Violation
The following requirements apply to all treatment plant bypasses and significant non-compliance occurrences, except for bypasses under the conditions contained in 40 CFR Part 122.41 (m)(4) as stated in Standard Provision A.13. As shown in Figure 2, treated wastewater from E-002 may discharge without sand filtration provided water quality is acceptable. In cases where E-002 does not receive media filtration, the Discharger shall accelerate monitoring to daily for all constituents it has effluent limits (with the exception of acute and chronic toxicity). In the event the Discharger violates or threatens to violate the conditions of the waste discharge requirements and prohibitions or intends to experience a plant bypass or treatment unit bypass due to: . .

E. Modify Section F.4, first paragraph, as follows:

Self-Monitoring Reports
For each calendar month, a self-monitoring report (SMR) shall be submitted to the Board in accordance with the requirements listed in Self-Monitoring Program, Part A. The purpose of the report is to document treatment performance, effluent quality and compliance with waste discharge

requirements prescribed by this Order, as demonstrated by the monitoring program data and the Discharger's operation practices. The report shall be submitted to the Board no later than the first day of the second month after the reporting period ends. The report shall be comprised of the following:

...

And add at the end of Section F.4a the following:

If the Discharger wishes to invalidate any measurement, the letter of transmittal will include: a formal request to invalidate the measurement; the original measurement in question; the reason for invalidating the measurement; all relevant documentation that supports the invalidation (e.g., laboratory sheet, log entry, test results, etc.); and discussion of the corrective actions taken or planned (with a time schedule for completion), to prevent recurrence of the sampling or measurement problem. The invalidation of a measurement requires the approval of Board staff, and will be based solely on the documentation submitted at this time.

And add at the end of Section F.4 the following:

The Discharger has the option to submit all monitoring results in an electronic reporting format approved by the Executive Officer. The Discharger is currently submitting SMRs electronically in a format approved by the Executive Officer in a letter dated December 17, 1999, Official Implementation of Electronic Reporting System (ERS). The ERS format includes, but is not limited to, a transmittal letter, summary of violation details and corrective actions, and transmittal receipt. If there are any discrepancies between the ERS requirements and the "hard copy" requirements listed in the SMP, then the approved ERS requirements supercede.

F. Add at the end of Section F.5, Annual Reporting, the following:

An Annual Report shall be submitted for each calendar year. The report shall be submitted to the Board by March 1 of the following year. This report shall include the following:

A comprehensive discussion of treatment plant performance and compliance with waste discharge requirements. This discussion should include any corrective actions taken or planned such as changes to facility equipment or operation practices which may be needed to achieve compliance, and any other actions taken or planned that are intended to improve performance and reliability of the Discharger's wastewater collection, treatment or disposal practices. Additionally, the Annual Report should include a plan view drawing or map showing the Dischargers' facility, flow routing and sampling and observation station locations.

G. The following are additions to Part A of Self-Monitoring Program:

1. Reporting Data in Electronic Format:

The Discharger has the option to submit all monitoring results in electronic reporting format approved by the Executive Officer. If the Discharger chooses to submit the SMRs electronically, the following shall apply:

a. *Reporting Method:* The Discharger shall submit SMRs electronically via the process approved by the Executive Officer in a letter dated December 17, 1999, Official Implementation of Electronic Reporting System (ERS).

b. *Modification of Reporting Requirements:* Reporting requirements F.4 in the attached SMP, Part A, dated August 1993, shall be modified as follows. In the future, the Board intends to modify Part A to reflect these changes.

c. *Monthly Report Requirements:* For each calendar month, an SMR shall be submitted to the Board in accordance with the following:

i. The report shall be submitted to the Board no later than 30 days from the last day of the reporting month

ii. *Letter of Transmittal:* Each report shall be submitted with a letter of transmittal. This letter shall include the following:

(1) Identification of all violations of effluent limits or other discharge requirements found during the monitoring period.

(2) Details of the violations: parameters, magnitude, test results, frequency, and dates.

(3) The cause of the violations.

(4) Discussion of corrective actions taken or planned to resolve violations and prevent recurrence, and dates or time schedule of action implementation. If previous reports have been submitted that address corrective actions, reference to such reports is satisfactory.

(5) If the Discharger wishes to invalidate any measurement, the letter of transmittal will include: a formal request to invalidate the measurement; the original measurement in question; the reason for invalidating the measurement; all relevant documentation that supports the invalidation (e.g., laboratory sheet, log entry, test results, etc.); and discussion of the corrective actions taken or planned (with a time schedule for completion), to prevent recurrence of the sampling or measurement problem. The invalidation of a measurement requires the approval of Regional Board staff, and will be based solely on the documentation submitted at this time.

(6) Signature: The letter of transmittal shall be signed by the Discharger' principal executive officer or ranking elected official, or duly authorized representative, and shall include the following certification statement:

"I certify under penalty of law that this document and all attachments have been prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. The information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

iii. *Compliance Evaluation Summary:* Each report shall include a compliance evaluation summary. This summary shall include the number of samples in violation of applicable effluent limits.

iv. *Results of Analyses and Observations:*

(1) Tabulations of all required analyses and observations, including parameter, sample date, sample station, and test result.

(2) If any parameter is monitored more frequently than required by this permit and SMP, the results of this additional monitoring shall be included in the monitoring report, and the data shall be included in data calculations and compliance evaluations for the monitoring period.

(3) Calculations for all effluent limits that require averaging of measurements shall use an arithmetic mean, unless specified otherwise in this permit or SMP.

(4) Data Reporting for Results Not Yet Available: The Discharger shall make all reasonable efforts to obtain analytical data for required parameter sampling in a timely manner. The Board recognizes that certain analyses require additional time in order to complete analytical processes and result reporting. For cases where required monitoring parameters require additional time to complete analytical processes and reporting, and results are not available in time to be included in the SMR for the subjected monitoring period, such cases shall be described in the SMR. Data for these parameters, and relevant discussions of any observed violations, shall be included in the next following SMR after the data become available.

(5) *Report Submittal*: The Discharger shall submit SMRs to:
Executive Officer
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612
Attn: NPDES Division

IV. RECORDING REQUIREMENTS – RECORDS TO BE MAINTAINED

Written reports, electronic records, strip charts, equipment calibration and maintenance records, and other records pertinent to demonstrating compliance with waste discharge requirements including self-monitoring program requirements, shall be maintained by the Discharger in a manner and at a location (e.g., wastewater treatment plant or discharger offices) such that the records are accessible to Board staff. These records shall be retained by the Discharger for a minimum of three years. The minimum period of retention shall be extended during the course of any unresolved litigation regarding the subject discharges, or when requested by the Regional Board or by the Regional Administrator of the USEPA, Region IX.

Records to be maintained shall include the following:

A. Parameter Sampling and Analyses, and Observations.

For each sample, analysis or observation conducted, records shall include the following:

1. Identity of parameter
2. Identity of sampling or observation station, consistent with the station descriptions given in this SMP.
3. Date and time of sampling or observation.
4. Method of sampling (grab, composite, other method). Date and time analysis started and completed, and name of personnel or contract laboratory performing the analysis.
5. Reference or description of procedure(s) used for sample preservation and handling, and analytical method(s) used.

6. Calculations of results.
7. Analytical method detection limits and related quantitation parameters.
8. Results of analyses or observations.

B. Flow Monitoring Data.

For all required flow monitoring, records shall include the following:

1. Total flow or volume, for each day.
2. Maximum, minimum and average daily flows for each calendar month.

C. Wastewater Treatment Process Solids

1. For each treatment unit process which involves solid removal from the wastewater stream, records shall include the following:
   a. Total volume and/or mass quantification of solids removed from each unit (e.g., grit, skimmings, undigested sludge), for each calendar month; and
   b. Final disposition of such solids (e.g., landfill, other subsequent treatment unit).
2. For final dewatered sludge from the treatment plant as a whole, records shall include the following:
   a. Total volume and/or mass quantification of dewatered sludge, for each calendar month; Solids content of the dewatered sludge; and
   b. Final disposition of dewatered sludge (point of disposal location and disposal method).

V. CHRONIC TOXICITY MONITORING REQUIREMENTS

A. Sampling. The Discharger shall collect 24-hour composite samples of the treatment facilities' effluent at the compliance point specified in Table 1 of the SMP, for critical life stage toxicity testing as indicated below. For toxicity tests requiring renewals, 24-hour composite samples collected on consecutive days are required.

B. Test Species. Chronic toxicity shall be monitored by using critical life stage test(s) and the most sensitive tests species identified by screening phase testing described in Attachment A of the SMP. The Discharger shall conduct routine monitoring with the species approved by the Executive Officer. The approved species at this time is (*Americamysis bahia*).

If the Discharger uses two or more species, after at least twelve test rounds, the Discharger may request the Executive Officer to decrease the required frequency of testing, and/or to reduce the number of compliance species to one. Such a request may be made only if toxicity exceeding the TUc values specified in the effluent limitations was never observed using that test species.

C. Conditions for Accelerated Monitoring: The Discharger shall accelerate the frequency of monitoring to monthly, or as otherwise specified by the Executive Officer, after exceeding a single sample maximum of 10 TUc.

D. Methodology: Sample collection, handling and preservation shall be in accordance with USEPA protocols. The test methodology used shall be in accordance with the references cited in the Permit, or as approved by the Executive Officer. A concurrent reference toxicant test shall be performed for each test.

E. Dilution Series: The Discharger shall conduct tests at 100%, 50%, 25%, 10%, and 5%, and 2.5%. The "%" represents percent effluent as discharged.

VI. CHRONIC TOXICITY REPORTING REQUIREMENTS

A. Routine Reporting: Toxicity test results for the current reporting period shall include the following, at a minimum, for each test:

1. Sample date(s)
2. Test initiation date
3. Test species
4. End point values for each dilution (e.g., number of young, growth rate, percent survival)
5. NOEC value(s) in percent effluent
6. IC_{15}, IC_{25}, IC_{40}, and IC_{50} values (or EC_{15}, EC_{25} ... etc.) in percent effluent
7. TUc values (100/NOEC, $100/IC_{25}$, and $100/EC_{25}$)
8. Mean percent mortality ($\pm$ s.d.) after 96 hours in 100% effluent
9. NOEC and LOEC values for reference toxicant test(s)
10. IC_{50} or EC_{50} value(s) for reference toxicant test(s)
11. Available water quality measurements for each test (i.e., pH, D.O., temperature, conductivity, hardness, salinity, ammonia)

B. Compliance Summary: The results of the chronic toxicity testing shall be provided in the most recent self-monitoring report and shall include a summary table of chronic toxicity data from at least three of the most recent samples. The information in the table shall include the items listed above under VI.A, item numbers 1, 3, 5, 6(IC_{25} or EC_{25}), 7, and 8.

VII. MISCELLANEOUS REPORTING

A. The Discharger shall retain and submit (when required by the Executive Officer) the following information concerning the monitoring program for organic and metallic pollutants.

1. Description of sample stations, times, and procedures.
2. Description of sample containers, storage, and holding time prior to analysis.
3. Quality assurance procedures together with any test results for replicate samples, sample blanks, and any quality assurance tests, and the recovery percentages for the internal surrogate standard.

B. The Discharger shall submit in the monthly self-monitoring report the metallic and organic test results together with the detection limits (including unidentified peaks). All unidentified (non-

Priority Pollutant) peaks detected in the USEPA 624, 625 test methods shall be identified and semi-quantified. Hydrocarbons detected at <10 µg/L based on the nearest internal standard may be appropriately grouped and identified together as aliphatic, aromatic and unsaturated hydrocarbons. All other hydrocarbons detected at > 10 µg/L based on the nearest internal standard shall be identified and semi-quantified.

C. The Discharger shall submit a clear and legible sketch showing the locations of all ponds, treatment facilities, and points of waste discharge. The map shall be updated by the Discharger as changes occur.

D. If the Discharger seeks credit for stormwater runoff/ballast water allocation (daily & monthly) for its discharge, it must use the method described in the attached Form A. To receive such credits, Form A must be submitted with the monthly self-monitoring report and the daily maximum allocation for each day outfall 002 is monitored must be computed.

Ballast water treated and discharged as part of outfall 002 shall be metered and the volume recorded in the attached Form A for each calendar year. The 30-day average shall be the sum of the daily values in a calendar month divided by the number of days in that month. Ballast-water allocations shall be calculated by multiplying the volume of ballast water, determined above by the appropriate volume of ballast water, determined above by the appropriate concentration listed under Effluent Limitation B.X of this permit.

VIII. SELECTED CONSTITUENTS MONITORING

A. Effluent monitoring shall include evaluation for all constituents listed in Table 1 by sampling and analysis of final effluent.

B. Analyses shall be conducted using the lowest commercially available and reasonably achievable detection levels. The objective is to provide quantification of constituents sufficient to allow evaluation of observed concentrations with respect to respective water quality objectives.

IX. MONITORING METHODS AND MINIMUM DETECTION LEVELS

The Discharger may use the methods listed in Table 1, above, or alternate test procedures that have been approved by the USEPA Regional Administrator pursuant to 40 CFR 136.4 and 40 CFR 136.5 (revised as of May 14, 1999).

X. Self-Monitoring Program Certification

I, Bruce H. Wolfe, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Board Order No. 2005-0030.

2. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the Discharger, and revisions will be ordered by the Executive Officer.

3. Is effective as of September 1, 2005.

BRUCE H. WOLFE
Executive Officer

Attachment A: Chronic Toxicity – Definition of Terms and Screening Phase Requirements
Attachment B: Form A: Stormwater/Ballast Water Allocation Procedures

ATTACHMENT A

CHRONIC TOXICITY

DEFINITION OF TERMS & SCREENING PHASE REQUIREMENTS

I. Definition of Terms

A. No observed effect level (NOEL) for compliance determination is equal to IC_{25} or EC_{25}. If the IC_{25} or EC_{25} cannot be statistically determined, the NOEL shall be equal to the NOEC derived using hypothesis testing.

B. Effective concentration (EC) is a point estimate of the toxicant concentration that would cause an adverse effect on a quantal, "all or nothing," response (such as death, immobilization, or serious incapacitation) in a given percent of the test organisms. If the effect is death or immobility, the term lethal concentration (LC) may be used. EC values may be calculated using point estimation techniques such as probit, logit, and Spearman-Karber. EC_{25} is the concentration of toxicant (in percent effluent) that causes a response in 25% of the test organisms.

C. Inhibition Concentration (IC) is a point estimate of the toxicant concentration that would cause a given percent reduction in a non-lethal, non-quantal biological measurement, such as growth. For example, an IC_{25} is the estimated concentration of toxicant that would cause a 25% reduction in average young per female or growth. IC values may be calculated using a linear interpolation method such as USEPA's Bootstrap Procedure.

D. No observed effect concentration (NOEC) is the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specific time of observation. It is determined using hypothesis testing.

II. Chronic Toxicity Screening Phase Requirements

A. The Discharger shall perform screening phase monitoring:

1. Subsequent to any significant change in the nature of the effluent discharged through changes in sources or treatment, except those changes resulting from reductions in pollutant concentrations attributable to source control efforts, or

2. Prior to Permit reissuance. Screening phase monitoring data shall be included in the NPDES Permit application for reissuance. The information shall be as recent as possible, but may be based on screening phase monitoring conducted within 5 years before the permit expiration date.

B. Design of the screening phase shall, at a minimum, consist of the following elements:

1. Use of test species specified in Tables 1 and 2 (attached), and use of the protocols referenced in those tables, or as approved by the Executive Officer;

2. Two stages:

   a. Stage 1 shall consist of a minimum of one battery of tests conducted concurrently. Selection of the type of test species and minimum number of tests shall be based on Table 3 (attached); and

b. Stage 2 shall consist of a minimum of two test batteries conducted at a monthly frequency using the three most sensitive species based on the Stage 1 test results and as approved by the Executive Officer.

3. Appropriate controls; and

4. Concurrent reference toxicant tests.

C. The Discharger shall submit a screening phase proposal to the Executive Officer for approval. The proposal shall address each of the elements listed above.

TABLE C 1
CRITICAL LIFE STAGE TOXICITY TESTS FOR ESTUARINE WATERS

SPECIES	(Scientific name)	EFFECT	TEST DURATION	REFER-ENCE
alga	(Skeletonema costatum) (Thalassiosira pseudonana)	growth rate	4 days	1
red alga	(Champia parvula)	number of cystocarps	7-9 days	3
Giant kelp	(Macrocystis pyrifera)	percent germination; germ tube length	48 hours	2
abalone	(Haliotis rufescens)	abnormal shell development	48 hours	2
oyster mussel	(Crassostrea gigas) (Mytilus edulis)	{abnormal shell development; {percent survival	48 hours	2
Echinoderms (urchins -	Strongylocentrotus purpuratus, S. franciscanus);	percent fertilization	1 hour	2
(sand dollar - Dendraster excentricus)				
shrimp	(Americamysis bahia)	percent survival; growth	7 days	3
shrimp	(holmesimysis costata)	percent survival; growth	7 days	2
topsmelt	(Atherinops affinis)	percent survival; growth	7 days	2
silversides	(Menidia beryllina)	larval growth rate; percent survival	7 days	3

Toxicity Test References:

1. American Society for Testing Materials (ASTM). 1990. Standard Guide for conducting static 96-hour toxicity tests with microalgae. Procedure E 1218-90. ASTM Philadelphia, PA.

2. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to West Coast Marine and Estuarine Organisms. USEPA/600/R-95/136. August 1995

3. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Marine and Estuarine Organisms as specified in 40CFR 136. Currently, this is USEPA/600/4-90/003, July 1994. Later editions may replace this version.

TABLE C 2
CRITICAL LIFE STAGE TOXICITY TESTS FOR FRESH WATERS

SPECIES	(Scientific name)	EFFECT	TEST DURATION	REFERENCE
fathead minnow	(Pimephales promelas)	survival; growth rate	7 days	4
water flea	(Ceriodaphnia dubia)	survival; number of young	7 days	4
alga	(Selenastrum capricornutum)	cell division rate	4 days	4

Toxicity Test Reference:

4. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms as specified in 40CFR 136. Currently, this is the third edition, USEPA/600/4-91/002, July 1994. Later editions may replace this version.

TABLE C 3

TOXICITY TEST REQUIREMENTS FOR STAGE ONE SCREENING PHASE

REQUIREMENTS	RECEIVING WATER CHARACTERISTICS		
	Discharges to Coast	Discharges to San Francisco Bay ‡	
	Ocean	Marine/Estuarine	Freshwater
Taxonomic Diversity:	1 plant 1 invertebrate 1 fish	1 plant 1 invertebrate 1 fish	1 plant 1 invertebrate 1 fish
Number of tests of each salinity type: Freshwater (†): Marine/Estuarine:	0 4	1 or 2 3 or 4	3 0
Total number of tests:	4	5	3

† The fresh water species may be substituted with marine species if:
1) The salinity of the effluent is above 1 parts per thousand (ppt) greater than 95% of the time, or
2) The ionic strength (TDS or conductivity) of the effluent at the test concentration used to determine compliance is documented to be toxic to the test species.

‡ Marine/Estuarine refers to receiving water salinities greater than 1 ppt at least 95% of the time during a normal water year.
Fresh refers to receiving water with salinities less than 1 ppt at least 95% of the time during a normal water year.

Attachment B of Self-Monitoring Program: FORM A

STORMWATER / BALLAST WATER ALLOCATION PROCEDURE

This procedure uses a bankbook to inventory stormwater. Any stormwater in excess of the estimated processed stormwater is inventoried. Stormwater allocations are calculated using the acutaul processed stormwater developed in the attached table.

Definitions:

Dry Weather Season - The months of June to September exclusive of a one-week period following any rainstorm.

Estimated Dry Weather Process Wastewater Flow - The average effluent flowrate during the previous dry weather season.

Stormwater Runoff - The product of the inches of rainfall and the runoff factor.

Estimated Processed Stormwater - The difference between the actual effluent flow rate and the ballast water plus dry weather flow rate.

Stormwater Bankbook - Calculated inventoried stormwater.

Actual Process Stormwater - If the stormwater bankbook is not zero, the acutal process stormwater equals the estimated flow. If the bankbook is zero, the actual processed stormwater is equal to the stormwater runoff for that day plus the bankbook for the previous day.

Attachment B of Self-Monitoring Program: Form A (Cont'd)

TABLE FOR RECORDS OF RAINFALL, STORMWATER RUNOFF, AND BALLAST FLOW

Date	Rainfall (inches)	Storm Runoff Flow (rainfall x runoff factor) Gallons	Ballast Flow in Gallons
1-2			
2-3			
3-4			
4-5			
5-6			
6-7			
7-8			
8-9			
9-10			
10-11			
11-12			
12-13			
13-14			
14-15			
15-16			
16-17			
17-18			
18-19			
19-20			
20-21			
21-22			
22-23			
23-24			
24-25			
25-26			
26-27			
27-28			
28-29			
29-30			
30-31			
31-1			
Total			
Monthly Average			

Attachment B of Self-Monitoring Program: Form A (Cont'd)

STORMWATER/BALLAST WATER ALLOCATION PROCEDURE

	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
	Rainfall (inch)	Stormwater Runoff (MGD)	Effluent Flow (MGD)	Dry Weather Effluent Flow (MGD)	Estimated Processed Stormwater (MGD)	Stormwater Bankbook (MGD)	Actual Processed Stromwater (MGD)	Ballast Water (MGD)
				Previous Month's Bankbook =				
1								
2								
3								
.								
.								
.								
30								
Total								
Average								
Maximum								

Column (B) = Column (A) X Runoff Factor.
Column (D) = Dry Weather Effluent Flow + Documented Process Water Increment.
Column (E) = Column (C) - Column (D) - Column (H).
Column (F):

Column (F) = Column (F) $_{\text{previous day}}$ + Column (B) - Column (E);
Column (F) = 0, if Column (F) <0.

Column (G):

Column (G) = Column (E), if Column (F) >0;
Column (G) = Column (B) + Column (F) $_{\text{previous day}}$, if Column (F) =0.

Attachment B of Self-Monitoring Program: Form A (Cont'd)

CALCULATION OF STORMWATER AND BALLAST WATER ALLOCATIONS

		Monthly Average Storm Runoff + Ballast Water Flow (expressed in 1000 gallons/day)	x	Allocation Factor (kg /1000 gallons)	=	(kg /day)	+	A.1 Effluent Limits (kg /day)	=	Total Effluent Limit (kg /day)	Year:
30-Day Average Limitation (kg /day)	BOD_5		x	0.098	=		+		=		
	TSS		x	0.079	=		+		=		
	TOC		x	0.22	=		+		=		
	COD		x	0.68	=		+		=		
	O&G		x	0.03	=		+		=		
	Phenol		x	0.00064	=		+		=		
	Total Chrome		x	0.00079	=		+		=		
	Hex Chrome		x	0.00011	=		+		=		

Attachment B of Self-Monitoring Program: Form A (Cont'd)

REPORT FORMAT FOR ADJUSTED EFFLUENT LIMITATIONS

	MAXIMUM DAILY LIMITS						
DATE	BOD (kg/day)	TSS (kg/day)	COD (kg/day)	O&G (kg/day)	PHENOL (kg/day)	TOTAL CHROME (kg/day)	HEX CHROME (kg/day)

Maximum Daily Limit (kg/day) = Effluent Limit B.5 (Daily Max in kg/day) + Stormwater Allocation (Daily Max in kg/day)

Stormwater Allocation (kg/day) = Effluent Limit B.6 (Daily Max in mg/l) x Daily Processed Stormwater (in MGD) x 3.785 liters/gal

ATTACHMENT D

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
1515 CLAY STREET, SUITE 1400
OAKLAND, CA 94612
(510) 622 – 2300 Fax: (510) 622 - 2460

FACT SHEET

for

NPDES PERMIT and WASTE DISCHARGE REQUIREMENTS for
CONOCOPHILLIPS
SAN FRANCISCO REFINERY
RODEO, CONTRA COSTA COUNTY
NPDES Permit No. CA0005053
ORDER NO. R2-2005-0030

PUBLIC NOTICE:

Written Comments

- Interested persons are invited to submit written comments concerning this draft permit.
- Comments must be submitted to the Regional Board no later than 5:00 p.m. on **May 16, 2005**.
- Send comments to the Attention of Robert Schlipf.

Public Hearing

- The draft permit will be considered for adoption by the Board at a public hearing during the Board's regular monthly meeting at: Elihu Harris State Office Building, 1515 Clay Street, Oakland, CA; 1st floor Auditorium.
- This meeting will be held on: June 15, 2005, starting at 9:00 am.

Additional Information

- For additional information about this matter, interested persons should contact Regional Board staff member: Mr. Robert Schlipf, Phone: (510) 622-2478; email: rschlipf@waterboards.ca.gov

This Fact Sheet contains information regarding an application for waste discharge requirements and National Pollutant Discharge Elimination System (NPDES) permit for the ConocoPhillips San Francisco Refinery at Rodeo for industrial wastewater and storm water discharges. The Fact Sheet describes the factual, legal, and methodological basis for the proposed permit and provides supporting documentation to explain the rationale and assumptions used in deriving the limits.

I. INTRODUCTION

ConocoPhillips (hereinafter called the Discharger) has applied to the Board for reissuance of waste discharge requirements and a permit to discharge industrial wastewater and storm water to waters of the State and the United States under the National Pollutant Discharge Elimination System (NPDES). The application and Report of Waste Discharge is dated September 14, 2004, and was supplemented on January 7, 2005.

The Discharger owns and operates a petroleum refinery with an average crude-run throughput of approximately 75,000 barrels per day. The Rodeo Refinery receives crude oil and other feedstocks by tankers or pipelines, and delivers refined products to customers via tanker/barge, rail cars, trucks,

and pipelines. Crude oil is cracked and processed at the site to produce gasoline, diesel fuel, jet fuel, butane, fuel oil, and other petroleum products. Sulfur and petroleum coke are produced as by-products. Lubricating oils and food grade waxes were once manufactured at the refinery, but the Discharger discontinued the production of these products in November 1997. According to 40 CFR Part 419.20, the U.S. Environmental Protection Agency (USEPA) has classified this facility as a cracking refinery. The USEPA and the Board have classified ConocoPhillips as a major discharger

The receiving water for the subject discharges is San Pablo Bay. Beneficial uses of San Pablo Bay, as identified in the Basin Plan and based on known uses of the receiving waters in the vicinity of the discharges, are:

a. Industrial Service Supply
b. Navigation
c. Water Contact Recreation
d. Non-contact Water Recreation
e. Commercial and Sport Fishing
f. Shellfish Harvesting
g. Wildlife Habitat
h. Preservation of Rare and Endangered Species
i. Fish Migration
j. Fish Spawning
k. Estuarine Habitat

The receiving waters for the subject discharge is San Pablo Bay, which is a tidally influenced water body, with significant fresh water inflows during the wet weather season. Furthermore, based on Regional Monitoring Program data, San Pablo Bay meets the definition of estuarine under the definitions included in the Basin Plan. Therefore, the effluent limitations specified in this Order for discharges to San Pablo Bay are based on the lower of the marine and freshwater Basin Plan WQOs and CTR and NTR WQC.

II. DESCRIPTION OF EFFLUENT

Board Order No. 00-015, (hereinafter the Previous Order), presently regulates the discharges. The discharges are described below and are based on information contained in the Report of Waste Discharge and recent self-monitoring reports.

a. **Waste 001** used to consist of 0.9 million gallons per day (mgd) of non-contact once-through salt cooling water, and 0.1 mgd of water from the onsite demineralization plant. On January 24, 2003, the Discharger discontinued this discharge, and began to combine this water with Waste 003. In May 2004, the Discharger reports that it plugged the last 40 feet of the outfall pipe and sump by filling them with concrete.

b. **Waste 002** consists of about 2.7 mgd of process wastewater, boiler blowdown, cooling tower blowdown, sanitary wastewater, sour water stripper bottoms, groundwater, stormwater runoff, offsite wastewater generated at other ConocoPhillips owned facilities and/or remediation activities conducted by the Discharger, and cargo hold washwater. Waste 002 is treated at the on-site wastewater treatment plant prior to being discharged to San Pablo Bay through a 6,000-foot, 18-inch diameter outfall pipe. The outfall, referred to as E-002, terminates with a multi-port diffuser (lat. 38°03′22″, long. 122°15′36″). Table 1 below describes the quality of treated effluent (E-002) based on self-monitoring data from 2001 through 2004.

Table 1: Summary of Pollutants in Treated Wastewater at E-002

Parameter	Average[1]	Daily Maximum
pH, standard units	5.7 (minimum)	8.8
Temperature (°F)	58 (minimum)	97
Total Coliform Organisms (MPN/ 100 mL)	< 20	40
BOD (mg/L)	4.5	8.5
COD (mg/L)	30	85
TSS (mg/L)	12	190
Ammonia as N (mg/L)	0.64	9.2
Oil and Grease (mg/L)	1.3	7.0
Total Phenols (µg/L)	ND	18
Arsenic (µg/L)	2.9	9.1
Cadmium (µg/L)	0.10	0.4
Chromium VI (µg/L)	ND	1.6
Copper (µg/L)	11	46
Lead (µg/L)	0.3	3.1
Mercury (µg/L)	0.028	0.518
Nickel (µg/L)	3.1	12
Selenium (µg/L)	16	49
Silver (µg/L)	ND	0.44
Zinc (µg/L)	9.9	34
Cyanide (µg/L)	ND	9.0

[1] Nondetect (ND) values were replaced with ½ the detection limit. In cases where more than half the data are ND, the average indicated in Table 1 is ND.

The wastewater treatment system begins with equalization tanks from which process wastewater flows by gravity to the API Separator where most of the oil and solids separate from the wastewater by gravity. The separated oil is transferred to the oil recovery system, and solids are transferred to a collection tank. Wastewater from the API Separator flows to a flash-mixing chamber where the Discharger may add primary and secondary coagulants. After the mixing chamber, wastewater flows by gravity to the Dissolved Air Flotation (DAF) units where additional oil and solids are removed. The DAF units (four in total) treat wastewater through (a) chemical addition to flocculate wastewater, (b) air bubbles to cause flocculated wastewater to float to the surface for removal, and (c) mechanical equipment to remove solids and floatable oil. The Discharger routes settled solids from the API and DAF units to the collection tank for transport to a delayed coking unit.

From the DAF units, wastewater flows by gravity over a weir into the DAF effluent channel into a sump, and is pumped to the biotreater system, which is augmented by powered activated carbon treatment (PACT). In the biotreater/PACT system, which consists of two aeration tanks that contain air diffusers that are attached to tank floors, microorganisms and powered activated carbon oxidize wastewater. The microorganisms speed up the decomposition process by using oxygen and food to grow and reproduce.

After the biotreater/PACT system, the Discharger routes wastewater to two clarifiers that operate in parallel to separate biological solids, carbon, and inert solids from the process wastewater. The biological solids and carbon settle to the bottom by gravity, and are recycled back to the

biotreater/PACT system based on sludge age and the rate of incoming wastewater flows. The Discharger also routes a portion of the recycled solids to the wet air regeneration (WAR) system.

From the clarifiers, the Discharger normally routes wastewater to as many as eight granular media filters that operate independently, in parallel (as shown in Figure 2). In order to trap very fine particles, each filter contains a 10-inch layer of fine grain sand. Over time, enough particles will cause the filter media surface to become completely covered, which causes the liquid level to rise. Rising water levels triggers an air mix system that uses low-pressure air to hold the larger particles in suspension to allow continued filtering. If the filter media surface becomes clogged with smaller particles, this will trigger the pulse mix regeneration system. This uses treated effluent to force atmospheric air trapped in the underdrain of the filter cell up through the media. Once the filter cell has gone through a number of pulse mix cycles, a backwash cycle will be initiated. From the granular media filters, the Discharger routes treated effluent by gravity to a sump, from which it is pumped to a deep-water diffuser in San Pablo Bay.

Before or following media filtration, treated wastewater is chlorinated using sodium hypochlorite. Disinfection occurs as wastewater travels through the offshore diffuser line. Before the chlorinated effluent is discharged to the Bay, sufficient excess sodium bisulfite is added to chemically reduce the chlorine to chlorides.

c. **Waste 003** consists of approximately 31 MGD of non-contact once-through salt cooling water, 0.2 MGD of wastewater from the Steam Power Plant (SPP) and U-240 demineralizer regeneration processes and approximately 0.5 MGD of stormwater runoff from undeveloped areas of the refinery, main parking lot, salvage yard, some portion of I-80 and San Pablo Avenue. The cooling water portion of Waste 003 is taken from San Pablo Bay. Limited amounts of fresh water may be added to supplement the salt cooling water as a result of saltwater pump failure or maintenance work. Intermittent chlorination and dechlorination to control the growth of marine organisms within the cooling system has not been used since 1991. Waste 003 is discharged at elevated temperature to San Pablo Bay via outfall E-003 (lat. 38°02′41″, long. 122°15′41″). Table 2 below describes the quality of once-through cooling water based on self-monitoring data from 2001 through 2004.

Table 2: Summary of Pollutants in Once-Through Cooling Water at E-003

Parameter	Average[1]	Daily Maximum
pH, standard units	6.8 (minimum)	8.4
Temperature (°F)	60 (minimum)	108
Total Organic Carbon (mg/L, net increase)	-0.03	2.5
Total Organic Carbon (mg/L)	1.9	6.3
Arsenic (µg/L)	40	49
Cadmium (µg/L)	0.07	0.17
Chromium VI (µg/L)	ND	ND
Copper (µg/L)	15	48
Lead (µg/L)	0.7	1.4
Mercury (µg/L)	0.011	0.016
Nickel (µg/L)	20	41
Selenium (µg/L)	19	31
Silver (µg/L)	ND	ND
Zinc (µg/L)	67	80

Cyanide (µg/L)	ND	ND

[1] Nondetect (ND) values were replaced with ½ the detection limit. In cases where more than half the data are ND, the average indicated in Table 2 is ND.

d. **Waste 004** consists of stormwater that the Discharger does not route to the wastewater treatment facility. The ROWD indicates that the discharge at E-004 consists of sheet flow from the refinery's Marine Terminal and access road causeway, originates from about 172,000 square feet of impervious areas, and is characterized before discharge to San Pablo Bay. Additionally, the ROWD indicates that the Discharger has not treated, stored, or disposed of significant materials in a manner that would allow exposure to stormwater in areas that drain to E-004. The pH of uncontrolled stormwater discharges from the Marine Terminal is affected by low pH rainwater (acid rain). As a result, E-004 discharge pH values are at times depressed below the low limit of 6.5 (see Table 3). Table 3 below describes the quality of stormwater runoff based on self-monitoring data from 2001 through 2004.

Table 3: Summary of Pollutants in Stormwater at E-004

Parameter	Average	Daily Maximum
pH, standard units	6.2 (minimum)	7.8
Conductivity (µmhos/cm)	163	812
Total Suspended Solids (mg/L)	74	221
Total Organic Carbon (mg/L)	30	332
Oil and Grease (mg/L)	2.0	10.2

e. **Miscellaneous** discharges include intermittent or periodic activities involving a discharge of fresh water to San Pablo Bay. The total estimated discharges are 0.01 MGD. The activities are necessary to ensure the safety and reliability of specific operations at the Marine Terminal Complex (MTC) and the Saltwater Intake Structure (SWIS). The operations involving fresh water discharge include, cleaning intake screens at the SWIS, fire monitor and hydrant testing at the MTC, washing salt and debris off a boom boat, condensate from steam traps from insulated lines at the MTC and algae removal from a concrete boat launch ramp.

III. GENERAL RATIONALE

The following documents are the bases for the requirements contained in the proposed Order, and are referred to under the specific rationale section of this Fact Sheet.

- Federal Water Pollution Control Act, as amended (hereinafter the **CWA**).
- Federal Code of Regulations, Title 40 - Protection of Environment, Chapter 1, Environmental Protection Agency, Subchapter D, Water Programs, Parts 122-129 (hereinafter referred to as 40 CFR specific part number).
- Water Quality Control Plan, San Francisco Bay Basin, adopted by the Board on June 21, 1995 (hereinafter the **Basin Plan**). The California State Water Resources Control Board (hereinafter the **State Board**) approved the Basin Plan on July 20, 1995 and by California State Office of Administrative Law approved it on November 13, 1995. The Board amended the Basin Plan on January 21, 2004, to adopt California Toxics Rule criteria for eight metals in lieu of existing Basin Plan objectives. The SWRCB and Office of Administrative Law approved this amendment on July 22, 2004, and October 4, 2004, respectively. The Basin

Plan defines beneficial uses and contains WQOs for waters of the State, including San Pablo Bay.

- California Toxics Rules, Federal Register, Vol. 65, No. 97, May 18, 2000 (hereinafter the **CTR**).
- National Toxics Rules 57 FR 60848, December 22, 1992, as amended (hereinafter the **NTR**).
- State Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, March 2, 2000 (hereinafter the **State Implementation Policy**, or **SIP**).
- Quality Criteria for Water, USEPA 440/5-86-001, 1986.
- Ambient Water Quality Criteria for Bacteria – 1986, USEPA440/5-84-002, January 1986.

IV. SPECIFIC RATIONALE

Several specific factors affecting the development of limitations and requirements in the proposed Order are discussed as follows:

1. Recent Plant Performance

Section 402(o) of CWA and 40 CFR § 122.44(l) require that water quality-based effluent limits (**WQBELs**) in re-issued permits be at least as stringent as in the previous permit. The SIP specifies that interim effluent limitations, if required, must be based on current treatment facility performance or on existing permit limitations whichever is more stringent. In determining what constitutes "recent plant performance", best professional judgment (**BPJ**) was used. Effluent monitoring data collected from 2001-2004 are considered representative of recent plant performance. These data specifically account for flow variation due to wet and dry years.

2. Impaired Water Bodies in 303(d) List

On June 6, 2003, U.S. EPA approved a revised list of impaired waterbodies prepared by the State. The list (hereinafter referred to as the 2002 303(d) list) was prepared in accordance with Section 303(d) of the Federal Clean Water Act to identify specific waterbodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations on point sources. San Pablo Bay is listed as an impaired waterbody. The pollutants impairing San Pablo Bay include mercury, nickel, selenium, PCBs total, dioxins and furans, chlordane, DDT, dieldrin, diazinon, and dioxin-like PCBs. San Pablo Bay is also impaired by exotic species. Copper, which was previously identified as impairing San Pablo Bay, was not included as an impairing pollutant in the 2002 303(d) list and has been placed on the new Monitoring List.

3. Effluent Limitations

The SIP requires final effluent limitations for all 303(d)-listed pollutants to be based on total maximum daily loads (TMDLs) and associated wasteload allocations (WLAs). The SIP and U.S. EPA regulations also require that final concentration-based WQBELs be included for all pollutants having Reasonable Potential to cause or contribute to an exceedence of applicable water quality standards (having Reasonable Potential or RP). The SIP requires that where the discharger has demonstrated infeasibility to meet the final WQBELs, interim performance-based limitations (IPBLs) or previous permit limitations (whichever is more stringent) be established in the permit, together

with a compliance schedule in effect until final effluent limitations are adopted. The SIP also requires the inclusion of appropriate provisions for waste minimization and source control where interim limitations are established.

4. Dilution

The Board believes a conservative 10:1 dilution credit for discharges of non-bioaccumulative pollutants to San Francisco Bay is necessary for protection of beneficial uses. The basis for limiting the dilution credit is based on SIP provisions in Section 1.4.2. The following outlines the basis for limiting the dilution credit:

(1) A far-field background station is appropriate because the San Francisco Bay watershed, including the receiving waters, is a very complex estuarine system with highly variable and seasonal upstream freshwater inflows and diurnal tidal saltwater inputs.
(2) Due to the complex hydrology of the San Francisco Bay watershed, a mixing zone cannot be accurately established.
(3) Previous dilution studies do not fully account for the cumulative effects of other wastewater discharges to the system.
(4) The SIP allows limiting a mixing zone and dilution credit for persistent pollutants (e.g., copper and nickel).

The main justification for limiting dilution credit is uncertainty in accurately determining ambient background and uncertainty in accurately determining the mixing zone in a complex estuarine system with multiple wastewater discharges. The basis for using 10:1 is that it was granted in the previous permit. This 10:1 limit is also based on the Basin Plan's prohibition number 1, which prohibits discharges like Waste 002 with less than 10:1. The following gives more detailed rational.

(1) Complex Estuarine System Necessitates Far-Field Background - The SIP allows background to be determined on a discharge-by-discharge or water body-by-water body basis (SIP section 1.4.3). Consistent with the SIP, Board staff has chosen to use a water body-by-water body basis because of the uncertainties inherent in accurately characterizing ambient background in a complex estuarine system on a discharge-by-discharge basis.

With this in mind, the Yerba Buena Island Station fits the guidance for ambient background in the SIP compared to other stations in the RMP. The SIP states that background data are applicable if they are "representative of the ambient receiving water column that will mix with the discharge." Board Staff believe that data from this station are representative of water that will mix with the discharge from Outfalls E-002 and E-003. Although this station is located near the Golden Gate, it would represent the typical water flushing in and out in the Bay Area each tidal cycle. For most of the Bay Area, the waters represented by this station make up a large part of the receiving water that will mix with the discharge.

(2) Uncertainties Prevent Accurate Mixing Zones in Complex Estuarine Systems - There are uncertainties in accurately determining the mixing zones for each discharge. The models that have been used by dischargers to predict dilution have not considered the three-dimensional nature of the currents in the estuary resulting from the interaction of tidal flushes and seasonal fresh water outflows. Saltwater is heavier than fresh water. Colder saltwater from the ocean flushes in twice a day generally under the warmer fresh river waters that flow out annually. When these waters mix and interact, complex circulation patterns occur due to the different densities of these waters. These complex patterns occur throughout the estuary but are most

prevalent in the San Pablo Bay, Carquinez Strait, and Suisun Bay areas. The locations change depending on the strength of each tide and the variable rate of delta outflow. Additionally, sediment loads to the Bay from the Central Valley also change on a longer-term basis. These changes can result in changes to the depths of different parts of the Bay making some areas more shallow and/or other areas more deep. These changes affect flow patterns that in turn can affect the initial dilution achieved by a discharger's diffuser.

(3) **Dye studies do not account for cumulative effects from other discharges** - The tracer and dye studies conducted are often not long enough in duration to fully assess the long residence time of a portion of the discharge that is not flushed out of the system. In other words, some of the discharge, albeit a small portion, makes up part of the dilution water. So unless the dye studies are of long enough duration, the diluting effect on the dye measures only the initial dilution with "clean" dilution water rather than the actual dilution with "clean" dilution water plus some amount of original discharge that resides in the system. Furthermore, both models and dye studies that have been conducted have not considered the effects of discharges from other nearby discharge sources, nor the cumulative effect of discharges from over 20 other major dischargers to San Francisco Bay system. While it can be argued the effects from other discharges are accounted for by factoring in the local background concentration in calculating the limitations, accurate characterization of local background levels are also subject to uncertainties resulting from the interaction of tidal flushing and seasonal fresh water outflows described above.

(4) **Mixing Zone Is Further Limited for Persistent Pollutants** - Discharges to the Bay Area waters are not completely-mixed discharges as defined by the SIP. Thus, the dilution credit should be determined using site-specific information for incompletely-mixed discharges. The SIP in section 1.4.2.2 specifies that the Regional Board "significantly limit a mixing zone and dilution credit as necessary… For example, in determining the extent of a mixing zone or dilution credit, the RWQCB shall consider the presence of pollutants in the discharge that are … persistent." The SIP defines persistent pollutants to be "substances for which degradation or decomposition in the environment is nonexistent or very slow." The pollutants at issue here are persistent pollutants (e.g., copper, lead, nickel, silver, and zinc). The dilution studies that estimate actual dilution do not address the effects of these persistent pollutants in the Bay environment, such as their long-term effects on sediment concentrations."

5. Basis for Prohibitions

a) Prohibition A.1 (no discharges other than as described in the permit): This prohibition is based on the Basin Plan, previous Order, and BPJ.

b) Prohibition A.2 (10:1 dilution): This prohibition is based on the Basin Plan. The Basin Plan prohibits discharges of wastewater not receiving a minimum dilution of 10:1 (Chapter 4, Discharge Prohibition No. 1).

c) Prohibition A.3 (no bypass or overflow): This prohibition is based on the previous Order and BPJ.

6. Basis for Effluent Limitations

a) Effluent Limitations B.1:

The refinery is classified as a "cracking refinery" as defined by the USEPA in 40 CFR § 419.20. Therefore, the USEPA Effluent Guidelines and Standards for Petroleum Refining Point Sources (40 CFR § 419 Subpart B) based on Best Available Technology Economically Achievable (BAT), Best Practicable Control Technology (BPT), and/or Best Conventional Pollutant Control technology (BCT), whichever are more stringent, are applicable to the Discharger.

This section contains production-based mass emission limits for the following constituents: Biochemical oxygen demand (BOD), total suspended solids (TSS), chemical oxygen demand (COD), oil & grease, phenolic compounds, ammonia (expressed as nitrogen), sulfide, and total and hexavalent chromium based on 40 CFR § 419 Subpart B. The application of these guidelines and standards is based on production rates at the refinery. In calculating currently applicable effluent limitations, Board staff has used the maximum annual facility production rate (Year 2000) for 1999-2003. During this period, the annual production rate did vary by more than 10 percent. A detailed description of the methodology and data used to calculate the technology-based effluent limitations is included in **Attachment 1.**

The limits for settleable solids are based on existing limits and the Basin Plan, and the concentration limits for oil and grease are based on existing limits and BPJ. The facility's ability to comply with all of the limits in B.1 has been demonstrated by existing plant performance.

b) Effluent Limitation B.2:

Concentration limits for pollutants contained in storm water and ballast water are based on existing limits, which were developed from the requirements in 40 CFR Part 419.22(e)(2), 419.23(f)(2), and 419.22(c). The Order retains the requirement that the Discharger record storm water and ballast flow on a daily basis and report daily maximum and monthly average flows. These flows are then used along with the above concentration limits to calculate the mass allowances that are added to the mass limits included in B.1.

c) Effluent Limitation B.3 - Whole Effluent Acute Toxicity: The Basin Plan specifies a narrative objective for toxicity, requiring that all waters shall be maintained free of toxic substances in concentrations that are lethal to or produce other detrimental response on aquatic organisms. Detrimental response includes but is not limited to decreased growth rate, decreased reproductive success of resident or indicator species, and/or significant alternations in population, community ecology, or receiving water biota. These effluent toxicity limits are necessary to ensure that this objective is protected. The acute toxicity limit is consistent with the previous permit and is based on the Basin Plan Table 4-2, page 4-69.

d) Effluent Limitation B.4 - Chronic Toxicity: The chronic toxicity limit is consistent with the previous permit and is based on the Basin Plan's narrative toxicity definition on page 3-4.

e) Effluent Limitation B.5 - Toxic Substances:

1. Reasonable Potential Analysis (RPA):
   40 CFR 122.44(d)(1)(i) specifies that permits are required to include WQBELs for all pollutants "which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard". Thus, the fundamental step in determining whether or not a WQBEL is required is to assess a pollutant's reasonable potential of excursion of its

applicable WQO or WQC. The following section describes the RPA methodology and the results of such an analysis for the pollutants identified in the Basin Plan and the CTR.

i) *WQOs and WQC*: The RPA involves the comparison of effluent data with appropriate WQOs including narrative toxicity objectives in the Basin Plan, applicable WQC in the CTR/NTR, and USEPA's 1986 Quality Criteria for Water. The Basin Plan objectives and CTR criteria are shown in **Attachment 2** of this Fact Sheet.

ii) *Methodology*: The RPA is conducted using the method and procedures prescribed in Section 1.3 of the SIP. Board staff have analyzed the effluent and background data and the nature of facility operations to determine if the discharge has reasonable potential to cause or contribute to exceedances of applicable WQOs or WQC. **Attachment 2** of this Fact Sheet shows the step-wise process described in Section 1.3 of the SIP.

iii) *Effluent and background data*: The RPA is based on effluent data collected by the Discharger from January 2001 through August 2004 (see **Attachment 2** of this Fact Sheet). Water quality data collected from San Francisco Bay at the Yerba Buena Island monitoring station through the RMP in 1993 to 2001 were reviewed to determine the maximum observed background values. The RMP station at Yerba Buena Island located in the Central Bay has been sampled for most of the inorganic and some of the organic toxic pollutants; however, not all the constituents listed in the CTR were analyzed by the RMP during this time. On May 15, 2003, a group of several San Francisco Bay Region dischargers (known as the Bay Area Clean Water Agencies, or BACWA) submitted a collaborative receiving water study, entitled the *San Francisco Bay Ambient Water Monitoring Interim Report*. This study summarizes the monitoring results from sampling events in 2002 and 2003 for the remaining priority pollutants not monitored by the RMP. The RPA was conducted and the WQBELs were calculated using RMP data from 1993 through 2001 for inorganics and organics at the Yerba Buena Island, and additional data from the BACWA *Ambient Water Monitoring Interim Report* for the Yerba Buena Island RMP station.

iv) *RPA determination*: The RPA results are shown below in **Table B** and **Attachment 2** of this Fact Sheet. Pollutants that exhibit RP are copper, lead, mercury, nickel, selenium, cyanide, dioxin (TCDD-Equivalents), chlorodibromomethane, dichlorobromomethane, 4,4-DDE, Dieldrin, and PCBs.

Table B. Summary of Reasonable Potential Results

# in CTR	PRIORITY POLLUTANTS	MEC or Minimum DL[1] (µg/L)	Governing WQO/WQC (ug/L)	Maximum Background (µg/L)	RPA Results[2]
2	Arsenic	**9.1**	36	2.46	N
4	Cadmium	**0.4**	1.4	0.1268	N
5b	Chromium (VI)	**1.6**	11	4.4	N
6	Copper	**20**	3.7	2.45	Y

# in CTR	PRIORITY POLLUTANTS	MEC or Minimum DL[1] (µg/L)	Governing WQO/WQC (ug/L)	Maximum Background (µg/L)	RPA Results[2]
7	Lead	**3.1**	1.2	0.8	Y
8	Mercury	**0.518**	0.025	0.0064	Y
9	Nickel	**13**	8.3	3.7	Y
10	Selenium	**49**	5	0.39	Y
11	Silver	**0.3**	1.1	0.0683	N
13	Zinc	**34**	64	4.6	N
14	Cyanide	**9**	1	NA	Y
16	2,3,7,8-TCDD (Dioxin)	**1.3*E-9**	1.4E-08	NA	Y
17	Acrolein	1	780	NA	N
18	Acrylonitrile	1	0.66	NA	N
19	Benzene	0.3	71	NA	N
20	Bromoform	**12**	360	NA	N
21	Carbon Tetrachloride	0.42	4.4	NA	N
22	Chlorobenzene	0.3	21000	NA	N
23	Chlordibromomethane	**43**	34	NA	Y
24	Chloroethane	0.34	NA	NA	Uo
25	2-Chloroethylvinyl Ether	0.32	NA	NA	Uo
26	Chloroform	**100**	NA	NA	Uo
27	Dichlorobromomethane	**60**	46	NA	Y
28	1,1-Dichloroethane	0.34	NA	NA	Uo
29	1,2-Dichloroethane	0.2	99	NA	N
30	1,1-Dichloroethylene	0.49	3.2	NA	N
31	1,2-Dichloropropane	0.2	39	NA	N
32	1,3-Dichloropropylene	0.2	1700	NA	N
33	Ethylbenzene	0.4	29000	NA	N
34	Methyl Bromide	**0.5**	4000	NA	N
35	Methyl Chloride	0.46	NA	NA	Uo
36	Methylene Chloride	0.4	1600	NA	N
37	1,1,2,2-Tetrachloroethane	0.3	11	NA	N
38	Tetrachloroethylene	0.44	8.85	NA	N
39	Toluene	**5.4**	200000	NA	N
40	1,2-Trans-Dichloroethylene	0.43	140000	NA	N
41	1,1,1-Trichloroethane	0.49	NA	NA	Uo
42	1,1,2-Trichloroethane	0.3	42	NA	N
43	Trichloroethylene	0.3	81	NA	N
44	Vinyl Chloride	0.47	525	NA	N
45	Chlorophenol	0.4	400	NA	N
46	2,4-Dichlorophenol	0.7	790	NA	N
47	2,4-Dimethylphenol	0.9	2300	NA	N
48	2-Methyl-4,6-Dinitrophenol	0.9	765	NA	N

# in CTR	PRIORITY POLLUTANTS	MEC or Minimum DL[1] (µg/L)	Governing WQO/WQC (ug/L)	Maximum Background (µg/L)	RPA Results[2]
49	2,4-Dinitrophenol	0.6	14000	NA	N
50	2-Nitrophenol	0.7	NA	NA	Uo
51	4-Nitrophenol	0.6	NA	NA	Uo
52	3-Methyl-4-Chlorophenol	0.5	NA	NA	Uo
53	Pentachlorophenol	0.9	7.9	NA	N
55	2,4,6-Trichlorophenol	0.6	6.5	NA	N
56	Acenaphthene	0.17	2700	0.0015	N
57	Acenaphthylene	0.03	NA	0.00053	Uo
58	Anthracene	0.03	110000	0.005	N
59	Benzidine	1	0.00054	NA	N
60	Benzo(a)Anthracene	0.09	0.049	0.0053	N
61	Benzo(a)Pyrene	0.09	0.049	0.00029	N
62	Benzo(b)Fluoranthene	0.06	0.049	0.0046	N
63	Benzo(ghi)Perylene	0.06	NA	0.0027	Uo
64	Benzo(k)Fluoranthene	0.05	0.049	0.0015	N
65	Bis(2-Chloroethoxy)Methane	0.9	NA	NA	Uo
66	Bis(2-Chloroethyl)Ether	0.7	1.4	NA	N
67	Bis(2-Chloroisopropyl)Ether	0.6	170000	NA	N
68	Bis(2-Ethylhexyl)Phthalate	0.8	5.9	NA	N
69	4-Bromophenyl Phenyl Ether	0.4	NA	NA	Uo
70	Butylbenzyl Phthalate	0.8	5200	NA	N
71	2-Chloronaphthalene	0.5	4300	NA	N
72	4-Chlorophenyl Phenyl Ether	0.5	NA	NA	Uo
73	Chrysene	0.1	0.049	0.0024	N
74	Dibenzo(a,h)Anthracene	0.04	0.049	0.00064	N
75	1,2 Dichlorobenzene	0.2	17000	NA	N
76	1,3 Dichlorobenzene	0.3	2600	NA	N
77	1,4 Dichlorobenzene	0.3	2600	NA	N
78	3,3-Dichlorobenzidine	0.3	0.077	NA	N
79	Diethyl Phthalate	0.7	120000	NA	N
80	Dimethyl Phthalate	0.7	2900000	NA	N
81	Di-n-Butyl Phthalate	1	12000	NA	N
82	2,4-Dinitrotoluene	0.6	9.1	NA	N
83	2,6-Dinitrotoluene	0.6	NA	NA	Uo
84	Di-n-Octyl Phthalate	0.9	NA	NA	Uo
85	1,2-Diphenylhydrazine	0.6	0.54	NA	N

# in CTR	PRIORITY POLLUTANTS	MEC or Minimum DL[1] (µg/L)	Governing WQO/WQC (ug/L)	Maximum Background (µg/L)	RPA Results[2]
86	Fluoranthene	0.03	370	0.011	N
87	Fluorene	0.02	14000	0.00208	N
88	Hexachlorobenzene	0.4	0.00077	0.0000202	N
89	Hexachlorobutadiene	0.7	50	NA	N
90	Hexachlorocyclopentadiene	0.4	17000	NA	N
91	Hexachloroethane	0.6	8.9	NA	N
92	Indeno(1,2,3-cd) Pyrene	0.02	0.049	0.004	N
93	Isophorone	0.8	600	NA	N
94	Naphthalene	**1**	NA	0.0023	Uo
95	Nitrobenzene	0.7	1900	NA	N
96	N-Nitrosodimethylamine	0.6	8.1	NA	N
97	N-Nitrosodi-n-Propylamine	0.8	1.4	NA	N
98	N-Nitrosodiphenylamine	0.7	16	NA	N
99	Phenanthrene	0.03	NA	0.0061	Uo
100	Pyrene	0.03	11000	0.0051	N
101	1,2,4-Trichlorobenzene	0.4	NA	NA	Uo
102	Aldrin	0.003	0.00014	NA	N
103	alpha-BHC	0.002	0.013	NA	N
104	beta-BHC	0.001	0.046	NA	N
105	gamma-BHC	0.001	0.063	NA	N
106	delta-BHC	0.002	NA	NA	Uo
107	Chlordane	0.005	0.00059	0.00018	N
108	4,4'-DDT	0.002	0.00059	0.000066	N
109	4,4'-DDE	0.002	0.00059	0.00069	Y
110	4,4'-DDD	0.003	0.00084	0.000313	N
111	Dieldrin	0.002	0.00014	0.000264	Y
112	alpha-Endosulfan	0.002	0.0087	0.000031	N
113	beta-Endosulfan	0.002	0.0087	0.000069	N
114	Endosulfan Sulfate	0.002	240	0.0000819	N
115	Endrin	0.002	0.0023	0.000036	N
116	Endrin Aldehyde	0.002	0.81	NA	N
117	Heptachlor	0.003	0.00021	0.000019	N
118	Heptachlor Epoxide	0.002	0.00011	0.000094	N
119-125	PCBs	0.000345	0.00017	NA	Y
126	Toxaphene	0.2	0.0002	NA	N
	Tributyltin	NA	0.005	NA	Ub, Ud

1) Maximum Effluent Concentration (MEC) in bold is the actual detected MEC, otherwise the MEC shown is the minimum detection level.
NA = Not Available (there is not monitoring data for this constituent).

2) RP =Yes, if either MEC or Background > WQO/WQC.
RP = No, if (1) both MEC and background < WQO/WQC or (2) no background and all effluent data non-detect, or no background and MEC<WQO/WQC (per WQ 2001-16 Napa Sanitation Remand)
RP = Ud (undetermined due to lack of effluent monitoring data).
RP = Uo (undetermined if no objective promulgated).
RP = Ub (undetermined due to lack of background data)

v) Pollutants *with no Reasonable Potential*: WQBELs are not included in the Order for constituents that do not have Reasonable Potential to cause or contribute to exceedance of applicable WQOs or WQC. However, monitoring for those pollutants is still required, under the provisions of the Board's August 6, 2001 Letter. If concentrations of these constituents are found to have increased significantly, the Discharger will be required to investigate the source(s) of the increase(s). Remedial measures are required if the increases pose a threat to water quality in the receiving water.

vi) *Permit reopener:* The permit includes a reopener provision to allow numeric effluent limitations to be added for any constituent that in the future exhibits Reasonable Potential to cause or contribute to exceedance of a WQO or WQC. This determination, based on monitoring results, will be made by the Board.

2. Final Water Quality-Based Effluent Limits: The final WQBELs were developed for the toxic and priority pollutants that were determined to have reasonable potential to cause or contribute to exceedances of the WQOs or WQC. Final effluent limitations were calculated based on appropriate WQOs/WQC, background concentrations at the Yerba Buena Island and Richardson Bay RMP Stations, a maximum dilution ratio of 10:1 (for non-bioaccumulative pollutants), and the appropriate procedures specified in Section 1.4 of the SIP (See **Attachment 3** of this Fact Sheet). For the purpose of the Proposed Order, final WQBELs refer to all non-interim effluent limitations. The WQO or WQC used for each pollutant with reasonable potential is indicated in Table C below as well as in **Attachment 3**.

Table C. Water Quality Objectives/Criteria for Pollutants with RP

Pollutant	Chronic WQO/WQC (µg/L)	Acute WQO/WQC (µg/L)	Human Health WQC (µg/L)	Basis of Lowest WQO /WQC Used in RP
Copper	3.7	5.8	--	CTR
Lead	1.2	32	--	CTR
Mercury	0.025	2.1	0.051	BP
Nickel	8.3	75	4,600	CTR
Selenium	5	20	--	NTR
Cyanide	1	1	22,000	CTR
Chlorodibromomethane	--	--	34	CTR
Dichlorobromomethane	--	--	46	CTR
TCDD TEQ	--	--	1.4×10^{-8}	BP
4,4'-DDE	--	--	0.00059	CTR
Dieldrin	0.0019	0.71	0.00014	CTR

Pollutant	Chronic WQO/WQC (µg/L)	Acute WQO/WQC (µg/L)	Human Health WQC (µg/L)	Basis of Lowest WQO /WQC Used in RP
PCBs (sum)	0.014	--	0.00017	CTR

3. Feasibility Evaluation: The Discharger submitted infeasibility to comply reports on January 7, 2005, for copper, lead, mercury, selenium, cyanide, 4,4'-DDE, dieldrin, and TCDD TEQ. For constituents that Board staff could perform a meaningful statistical analysis (i.e., copper, lead, mercury, and selenium), it used self-monitoring data from January 2001- August 2004 to compare the mean, 95th percentile, and 99th percentile with the long-term average (LTA), AMEL, and MDEL to confirm if it is feasible for the Discharger to comply with WQBELs. If the LTA, AMEL, and MDEL all exceed the mean, 95th percentile, and 99th percentile, it is feasible for the Discharger to comply with WQBELs. Table D below shows these comparisons in µg/L

Table D. Summary of Feasibility Analysis

Constituent	Median / LTA	95th / AMEL	99th / MDEL	Feasible to Comply
Copper	6.4 < 8.1	19 > 13	29 > 25	**No**
Lead	0.11 < 1.1	0.75 < 3.2	1.7 < 9.5	**Yes**
Mercury	0.014 > 0.010	0.088 > 0.019	0.19 > 0.045	**No**
Selenium	14 > 2.8	32 > 4.2	43 > 8.0	**No**

For 4,4'-DDE, dieldrin, and PCBs compliance with the final WQBELs cannot be determined at this time as the minimum levels (MLs) are higher than the final calculated WQBELs. For cyanide and dioxin compounds it was not possible to statistically analyze data to the number of nondetects.

Table E below summarizes the calculated WQBELs, and the feasibility to comply analysis for all pollutants with effluent limitations. The WQBELs calculation is attached as Attachment 3 of this Fact Sheet.

Table E. Final WQBELs and Feasibility to Comply

Pollutant	MDEL µg/L	AMEL µg/L	**Feasible to Comply?**
Copper	25	13	**No**
Lead	9.5	3.2	**Yes**
Mercury	0.045	0.019	**No**
Nickel	82	41	**Yes**
Selenium	8.0	4.2	**No**
Cyanide	6.4	3.2	**No**
Chlorodibromomethane	650	340	**Yes**
Dichlorobromomethane	940	460	**Yes**
TCDD TEQ	0.000000028	0.000000014	**No**
4,4'-DDE	0.0012	0.00059	**No**
Dieldrin	0.00028	0.00014	**No**
PCBs (sum)	0.00034	0.00017	**No**

4. **Interim Concentration Limits and Compliance Schedules:** Interim effluent limitations were derived for those constituents (copper, mercury, selenium, cyanide, TCDD TEQ, 4,4'-DDE, dieldrin, and PCBs) for which the Discharger has shown infeasibility of complying with the respective final limitations and has demonstrated that compliance schedules are justified based on the Discharger's source control and pollution minimization efforts in the past, and continued efforts in the present and future. The interim effluent concentration limitations for copper and selenium are based on the previous permit effluent limitation. For cyanide, TCDD Equivalents, 4,4-DDE, Dieldrin, and PCBs there were insufficient effluent data (i.e., detected values) to develop statistically valid performance-based interim limits. Therefore, for these pollutants the interim effluent concentration limits are based on the previous Order limits or the minimum levels contained in the SIP. For mercury, the interim effluent limit was based on a statistical analysis of "low detection limit" (ultraclean) mercury data pooled from the refinery dischargers in the Region. Interim performance-based mass limits have also been established for mercury and selenium. These interim limits are discussed in more detail below.

   This permit establishes compliance schedules until May 17, 2010, for copper, 4,4'-DDE, dieldrin, and PCBs; and until April 27, 2010 for mercury, cyanide, and selenium. Since these compliance schedules are within the effective date of the permit. As such, this Order includes final WQBELs. For TCDD-TEQ, this permit established a compliance schedule until August 30, 2015, which exceeds the length of the permit. Therefore, in accordance with the SIP, the calculated final limitations are intended as a point of reference for TCDD-TEQ. Attachment 7 provides the general basis for the above compliance schedules.

   During the compliance schedules, interim limitations are included based on current treatment facility performance or on previous permit limitations, whichever is more stringent to maintain existing water quality. The Board may take appropriate enforcement actions if interim limitations and requirements are not met.

   i. **Copper** – Further Discussion and Rationale for Interim Effluent Limitation: An interim effluent limitation is required for copper since the Discharger has demonstrated, and the Board has verified that the final effluent limitations calculated according to the SIP (AMEL of 13 µg/L and MDEL of 25 µg/L) will be infeasible to meet. The SIP requires the interim numeric effluent limitation for the pollutant be based on either current treatment facility performance, or on the previous Order's limitation, whichever is more stringent. Self-monitoring data from January 2001- August 2004 indicate that effluent copper concentrations ranged from 1.8 µg/L to 20 µg/L (44 samples). Board staff calculated an interim performance based limitation (IPBL) of 45 µg/L (99.87th percentile of the effluent data, based on a natural log distribution), which is less stringent than the daily average limitation of 37 µg/L contained in the previous permit. Therefore, the previous permit limitation of 37 µg/L is established in this Order as the interim limitation, and will remain in effect until May 17, 2010, or until the Board amends the limitation based on additional data or SSOs.

   ii. **Mercury** – Further Discussion and Rationale for Interim Effluent Limitation: An interim effluent limitation is required for mercury since the Discharger has demonstrated, and the Board has verified that the final effluent limitations calculated according to the SIP (AMEL of 0.019 µg/L and MDEL of 0.045 µg/L) will be infeasible to meet. Self-

monitoring data from January 2001 through August 2004 indicate that effluent mercury concentrations ranged from 0.0006 µg/L to 0.0665 µg/L, 47 samples, excluding June 5, 2001, datum of 0.518 µg/L). In light of the similarities between refineries regarding the nature of their process wastes and treatment technologies involved, in 2001 Board staff pooled ultraclean mercury data from the refineries to enable a statistical approach to setting an interim limit based on best available information and performance. Statistical analysis from this pooled data set results in an interim performance-based monthly average mercury effluent limit of 0.075 µg/L that is applicable to refinery discharges. This IPBL shall remain in effect until April 27, 2010, or until the Board amends the limitation based on a WLA in the TMDL for mercury. However, during the next permit reissuance, the Board may reevaluate the interim mercury limitation.

iii. **Selenium** - Further Discussion and Rationale for Interim Effluent Limitation: An interim effluent limitation is required for selenium since the Discharger has demonstrated, and the Board has verified that the final effluent limitations calculated according to the SIP (AMEL of 4.2 µg/L and MDEL of 8.0 µg/L) will be infeasible to meet. Self-monitoring data from January 2001- August 2004 indicate that effluent selenium concentrations ranged from <1 µg/L to 49 µg/L (192 samples). Board staff calculated an IPBL of 55 µg/L (99.87th percentile of the effluent data, based on a cube root distribution), which is less stringent than the previous permit. Therefore, interim limits for selenium are the same as the limits included in the previous Order and are based on a Settlement Agreement between the Western States Petroleum Association (WSPA) and the Board. The previous permit contained a daily maximum concentration limit of 50 µg/L, and an annual average mass emission limit of 0.85 lbs/day. These interim limits will remain in effect until April 27, 2010, or until the Board amends the limitation based on additional data or SSOs.

iv. **Cyanide** - Further Discussion and Rationale for Interim Effluent Limitation: An interim effluent limitation is required for cyanide since the Discharger has demonstrated, and the Board has verified that the final effluent limitations calculated according to the SIP (AMEL of 3.2 µg/L and MDEL of 6.4 µg/L) will be infeasible to meet. Self-monitoring data from January 2001- August 2004 indicate that effluent cyanide concentrations ranged from < 3 µg/L to 9 µg/L (44 samples). Board staff could not perform a meaningful statistical analysis on the data because it contained too many nondetects. Therefore, the previous permit limitation of 25µg/L is established in this Order as the interim limitation, and will remain in effect until April 27, 2010, or until the Board amends the limitation based on additional data or SSOs

v. **4,4'-DDE and Dieldrin** – Further Discussion and Rationale for Interim Effluent Limitations: Interim effluent limitations are required for these pollutants because compliance with the final WQBELs (AMEL of 0.00059 µg/L and MDEL of 0.0012 µg/L for 4,4'-DDE and AMEL of 0.00014 µg/L and MDEL of 0.00028 µg/L for dieldrin) cannot be determined at this time as the MLs are higher than the final calculated WQBELs. Interim limitations are established at the respective MLs. The interim limitations are as follows; 4,4'-DDE is 0.05 µg/L and dieldrin is 0.01 µg/L. These interim limits shall remain in effect until May 17, 2010, or until the Board amends the limitation based on WLAs in the TMDL for 4,4'-DDE or dieldrin.

vi. **PCBs (sum)** - Further Discussion and Rationale for Interim Effluent Limitations: Interim effluent limitations are required for PCBs because compliance with the final WQBELs

(AMEL of 0.00017 µg/L and MDEL of 0.00034 µg/L) cannot be determined at this time as the MLs are higher than the final calculated WQBELs. The Interim limitation is therefore established at the respective MLs. The interim limitations are 0.5 µg/L for each PCB. This interim limits shall remain in effect until May 17, 2010, or until the Board amends the limitation based on WLAs in the TMDL for PCBs.

f) Effluent Limitation B.6 - Mercury Interim Mass Limit: This Order establishes a running average mercury, mass-based effluent limitation of 0.024 kilograms per month. This limit was set at a value corresponding to three standard deviations above the mean of the running annual average mass emission values for January 2001 through August 2004 (See **Attachment 4** to this Fact Sheet). This mass-based effluent limitation maintains current loadings until a TMDL is established and is consistent with state and federal antidegradation and antibacksliding requirements. The final mass based effluent limitation will be based on the WLA derived from the mercury TMDL.

g) Effluent Limitation B.7 – Selenium Interim Mass Limit: As mentioned above, this Order includes an interim mass emission limit for selenium of 0.85 lbs/day. This limitation is based on a Settlement Agreement between WSPA and the Board.

h) Effluent Limitation B.8 – Total Coliform Organisms Limit: The purpose of this effluent limitation is to ensure adequate disinfection of the discharge in order to protect beneficial uses of the receiving waters. Effluent limits are based on water quality objectives for bacteriological parameters for receiving water beneficial uses. Water quality objectives are given in terms of parameters, which serve as surrogates for pathogenic organisms. The traditional parameter for this purpose is coliform bacteria, either as total coliform or as fecal coliform. The Basin Plan's Table 4-2 (pg. 4–69) and its footnotes allow fecal coliform limitations to be substituted for total coliform limitations provided that the Discharger conclusively demonstrates "through a program approved by the Board that such substitution will not result in unacceptable adverse impacts on the beneficial uses of the receiving waters". Until the Discharger undertakes a bacteriological study to conclusively demonstrate that substitution of fecal coliform for total coliform limits would be protective of the beneficial uses of the receiving water, the coliform effluent limitation will continue to be expressed as total coliform. Total coliform limits are:

   i. The moving median value for the Most Probable Number (MPN) of total coliform bacteria in five (5) consecutive samples shall not exceed 240 MPN/100 ml; and,

   ii. Any single sample shall not exceed 10,000 MPN/100 ml.

i) Effluent Limitation B.9 – Residual Chlorine Limit: This limit is a technology-based limits representative of, and intended to ensure, adequate and reliable secondary level wastewater treatment. This limit is based on the Basin Plan (Chapter 4, pg 4-8, and Table 4-2, at pg 4-69).

j) Effluent Limitation B.10 – pH Limit: This effluent limit is a standard secondary treatment requirement and is unchanged from the existing permit. The limit is based on the Basin Plan (Chapter 4, Table 4-2), which is derived from federal requirements (40 CFR 133.102). This is an existing permit effluent limitation and compliance has been demonstrated by existing plant performance.

k) Effluent Limitation B.11 – Conventional Limits at Outfall E-003: These limits are carried over from the previous permit, and based on the Basin Plan.

l) Effluent Limitation B.12 – Stormwater Limits at Outfall E-004: These limits are based on based on 40 CFR § 419 Subpart B.

m) Effluent Limitation B.13 – Credit for Recycled Water Use: This credit is to encourage the Discharger to use reclaimed water provided it will not cause acute toxicity to aquatic life.

7. Basis for Receiving Water Limitations

a) Receiving water limitations C.1, C.2, and C.3 (conditions to be avoided): These limits are based on the previous Order and the narrative/numerical objectives contained in Chapter 3 of the Basin Plan, page 3-2 – 3-5.

b) Receiving water limitation C.4 (compliance with State Law): This requirement is in the previous permit, requires compliance with Federal and State law, and is self-explanatory.

8. Basis for Self-Monitoring Requirements

The SMP includes monitoring at the outfalls for conventional, non-conventional, and toxic pollutants, and acute and chronic toxicity. For two constituents that the Board has granted interim limits (copper and selenium), this Order contains weekly monitoring. The exceptions to this requirement are cyanide, mercury, 4,4-DDE, dieldrin, dioxin TEQ, and PCBs. Additional cost and effort is required for ultra-clean mercury monitoring, thus this Order requires monthly monitoring. For dioxins and furans, 4,4-DDE, dieldrin, and PCBs due to the considerable costs and the non-detects the Discharger has found, this Order requires twice yearly monitoring, which is also consistent with the SIP. Further, this Order requires monthly monitoring of nickel and lead, and semiannual monitoring of chlorodibromomethane and dichlorobromomethane to demonstrate compliance with final effluent limitations. In lieu of near field discharge specific ambient monitoring, it is acceptable that the Discharger participate in collaborative receiving water monitoring with other dischargers under the provisions of the August 6, 2001 letter, and the RMP. On E-003 (once-through cooling water), this Order requires monthly monitoring of influent and effluent for arsenic, zinc, copper, lead, nickel, and selenium, and twice yearly monitoring for 4,4-DDE, dieldrin, and TCDD TEQ, to obtain sufficient data to establish final WQBELs based on intake credits. The Reasonable Potential Analysis and Calculation of Final Limits for E-003, without consideration of intake credits, are documented in Attachments 5 and 6 to the Fact Sheet.

9. Basis for Provisions

a) Provisions D.1. (Permit Compliance and Rescission of Previous Permit): Time of compliance is based on 40 CFR 122. The basis of this Order superceding and rescinding the previous permit Order is 40 CFR 122.46.

b) Provision D.2 (Toxic Pollutants at E-003). This provision is based on the SIP, which requires effluent limits for pollutants that exhibit a reasonable potential. At this time, the Discharger has not collected sufficient data at E-003 to develop final WQBELs based on intake credits. Therefore, this Order includes a provision for the development of such limits.

c) Provision D.3 (Copper, Nickel, and Zinc Reductions at E-003). This provision requires the Discharger to implement source control measures for these pollutants since limited data shows concentrations in effluent above those found in the influent. Specifically, the Discharger needs to consider (a) upgrading saltwater cooling system metallurgy (e.g., pumps, heat exchangers, and

strainers) from brass, bronze, and copper-containing alloys to more corrosion resistant alloys such as titanium; and (b) phasing-out zinc based cathodic protection.

d) Provision D.4 (Mass and Concentration Credits). This provision is necessary to protect beneficial uses identified in the Basin Plan (the Discharger must ensure that granting it pollutant credits for the use of recycled water will not cause acute toxicity).

e) Provision D.5. (Storm Water Pollution Prevention Plan and Annual Report): This provision, is based on and consistent with Basin Plan objectives, statewide storm water requirements for industrial facilities, and applicable USEPA regulations.

f) Provision D.6 (Effluent Characterization for Selected Constituents): This provision establishes monitoring requirements as stated in the Board's August 6, 2001 Letter under Effluent Monitoring for major dischargers. Interim and final reports shall be submitted to the Board in accordance with the schedule specified in the August 6, 2001 Letter. This provision is based on the Basin Plan and the SIP.

g) Provision D.7 (Receiving Water Monitoring). This provision, which requires the Discharger to continue to conduct receiving water monitoring is based on the previous Order and the Basin Plan.

h) Provision D.8 (Pollutant Prevention and Minimization Program): This provision is based on the Basin Plan, page 4-25 – 4-28, and the SIP, Section 2.1, Compliance Schedules.

i) Provision D.9 (Thermal Plume Monitoring): This provision is necessary to ensure that the once-through cooling water discharge through outfall 003 does not impact beneficial uses.

j) Provision D.10 (Impingement and Entrainment Study at I-001): This provision is necessary to quantify the potential impact of the Discharger's intake structure (I-001) on aquatic organisms.

k) Provision D.11 (Whole Effluent Acute Toxicity): This provision establishes conditions by which compliance with permit effluent limits for acute toxicity will be demonstrated. Conditions include the use of flow through bioassays with rainbow trout, in accordance with *Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms,* 5th Edition. These conditions are based on the effluent limits for acute toxicity given in the Basin Plan, Chapter 4, and BPJ.

l) Provision D.12 (Whole Effluent Chronic Toxicity): This provision establishes conditions and protocol by which compliance with the Basin Plan narrative WQO for toxicity will be demonstrated. Conditions include required monitoring and evaluation of the effluent for chronic toxicity and numerical values for chronic toxicity evaluation to be used as 'triggers' for initiating accelerated monitoring and toxicity reduction evaluation(s). These conditions apply to the discharges to San Francisco Bay and the numerical values for chronic toxicity evaluation are based on a minimum initial dilution ratio of 10:1. This provision also requires the Discharger to conduct a screening phase monitoring requirement and implement toxicity identification and reduction evaluations when there is consistent chronic toxicity in the discharge. New testing species and/or test methodology may be available before the next permit renewal. Characteristics, and thus toxicity, of the process wastewater may also have been changed during the life of the permit. This screening phase monitoring is important to help determine which test species is most sensitive to the toxicity of the effluent for future compliance monitoring. The

proposed conditions in the draft permit for chronic toxicity are based on the Basin Plan narrative WQO for toxicity, Basin Plan effluent limitations for chronic toxicity (Basin Plan, Chapter 4), U.S. EPA and SWRCB Task Force guidance, applicable federal regulations [40 CFR 122.44(d)(1)(v)], and BPJ.

m) Provision D.13 (Optional Mass Offset): This option is provided to encourage the Discharger to implement aggressive reduction of mass loads to San Pablo Bay.

n) Provision D.14 (Contingency Plan Update): This provision is based on the requirements stipulated in Board Resolution No. 74-10.

o) Provision D.15 (Self-Monitoring Program): The Discharger is required to conduct monitoring of the permitted discharges in order to evaluate compliance with permit conditions. Monitoring requirements are contained in the Self Monitoring Program (SMP) of the Permit. This provision requires compliance with the SMP, and is based on 40 CFR 122.44(i), 122.62, 122.63 and 124.5. The SMP is a standard requirement in almost all NPDES permits issued by the Board, including this Order. It contains definitions of terms, specifies general sampling and analytical protocols, and sets out requirements for reporting of spills, violations, and routine monitoring data in accordance with NPDES regulations, the California Water Code, and Board's policies. The SMP also contains a sampling program specific for the facility. It defines the sampling stations and frequency, the pollutants to be monitored, and additional reporting requirements. Pollutants to be monitored include all parameters for which effluent limitations are specified. Monitoring for additional constituents, for which no effluent limitations are established, is also required to provide data for future completion of RPAs for them.

p) Provision D.16 (Standard Provisions and Reporting Requirements): The purpose of this provision is to require compliance with the standard provisions and reporting requirements given in this Board's document titled *Standard Provisions and Reporting Requirements for NPDES Surface Water Discharge Permits, August 1993* (the Standard Provisions), or any amendments thereafter. That document is incorporated in the permit as an attachment to it. Where provisions or reporting requirements specified in the permit are different from equivalent or related provisions or reporting requirements given in the Standard Provisions, the permit specifications shall apply. The standard provisions and reporting requirements given in the above document are based on various state and federal regulations with specific references cited therein.

q) Provision D.17 (Change in Control or Ownership): This provision is based on 40 CFR 122.61.

r) Provision D.18 (Permit Reopener): This provision is based on 40 CFR 123.

s) Provision D.19 (Permit Expiration and Reapplication): This provision is based on 40 CFR 122.46 (a).

V. WASTE DISCHARGE REQUIREMENT APPEALS

Any person may petition the State Water Resources Control Board to review the decision of the Board regarding the Waste Discharge Requirements. A petition must be made within 30 days of the Board public hearing.

VI. ATTACHMENTS

Attachment 1: Calculations for Production-Based Effluent Limitations
Attachment 2: RPA Results for Priority Pollutants at E-002
Attachment 3: Calculation of Final WQBELs at E-002
Attachment 4: Calculation of Mercury Mass Limit
Attachment 5: RPA Results for Priority Pollutants at E-003
Attachment 6: Calculation of Final WQBELs at E-003
Attachment 7: General Basis for Compliance Schedules

ATTACHMENT 1

CALCULATIONS FOR PRODUCTION-BASED
BPT, BCT, AND BAT EFFLUENT LIMITATIONS
FOR
CONOCO PHILLIPS SAN FRANCISCO REFINERY

References:

1) 40 CFR § 419 Subpart B Effluent Limitations Guidelines and New Source Performance Standards for the Petroleum Refining Point Source Category (Cracking Subcategory)
2) Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Petroleum Refining Point Source Category
3) Guide for the Application of Effluent Limitations Guidelines for the Petroleum Refining Industry
4) NPDES Application for Permit Reissuance (September 2004)
5) Refinery Production Data 1999 – 2003, provided by the facility (Data from 2000 was selected as the high year based on average production rates and was used in calculations)

Production-Based Effluent Limitations

STEP 1: Determine the size factor based on the refinery feedstock rate. Based on 40 CFR § 419 Subpart B, a total refinery throughput of 75 kbbl/d results in a

SIZE FACTOR = 1.13

STEP 2: Determine the process configuration based on the process rates:

Process	Process Feedstock Rate (kbbl/d)	Fraction of Total Throughput	Weight Factor	Process Configuration
Total Refinery Throughput = 135 kbbl/d				
CRUDE:				
Atmospheric Distillation	74.96	1		
Vacuum Crude Distillation	36.35	0.485		
Desalting	23.86	0.318		
TOTAL	135.17	1.803	1	1.803
CRACKING & COKING:				
Hydrocracking	35.11	0.468		
Delayed Coking	21.2	0.283		
Hydrotreating	39.27	0.524		
TOTAL	95.58	1.275	6	7.254
TOTAL PROCESS CONFIGURATION =				9.057

(kbbl/d = Thousand Barrels per day)

STEP 3: Determine the process factor. Based on 40 CFR § 419 Subpart B, a total process configuration of 9.057 results in a

PROCESS FACTOR = 1.82

STEP 4: Based on 40 CFR § 419.22(a), 419.23(a), and 419.24(a), the BPT/BAT/BCT effluent limit is equal to

(THROUGHPUT) X (SIZE FACTOR) X (PROCESS FACTOR) X (EFFLUENT LIMIT FACTOR)

EFFLUENT LIMIT = (74.96)(1.13)(1.82)(Effluent Limit Factor)
= (154.2)(Effluent Limit Factor)

Pollutant	Effluent Limit in 40 CFR 419B						Multip-lier	Final Limit Calculated						Final Limit	
	BPT		BAT		BCT			BPT		BAT		BCT			
	Daily Max	30-d Avg	Daily Max	30-d Avg	Daily Max	30-d Avg		Daily Max	30-d Avg	Daily Max	30-d Avg	Daily Max	30-d Avg	Daily Max	30-d Avg
	lb/kbbl	lb/kbbl	lb/kbbl	lb/kbbl	lb/kbbl	lb/kbbl		lb/d	lb/d	lb/d	lb/d	lb/d	lb/d	lb/d	lb/d
BOD_5	9.9	5.5			9.9	5.5	160.1	1,527	848			1,527	848	1,527	848
TSS	6.9	4.4			6.9	4.4	160.1	1,064	678			1,064	678	1,064	678
COD	74	38.4	74	38.4			160.1	11,410	5,921	11,410	5,921			11,410	5,921
O&G	3	1.6			3	1.6	160.1	463	247			463	247	463	247
Phenols (4AAP)*	0.074	0.036					160.1	11.4	5.6					11.4	5.6
NH_3-N	6.6	3	6.6	3			160.1	1,017	463	1,017	463			1,017	463
Sulfide	0.065	0.029	0.065	0.029			160.1	10.0	4.8	10.0	4.8			10.0	4.8
Total Cr	0.15	0.088					160.1	23.1	13.6					23.1	13.6
Hex Cr	0.012	0.0056					160.1	1.85	0.86					1.85	0.86

*The BPT limits for these constituents are applicable only if they are more stringent than BAT limits (see STEP 5) below).

STEP 5: Calculate Amended BAT limits pursuant to 40 CFR § 419.43, for phenolic compounds (4AAP), total and hexavalent chromium. The effluent limit is equal to the sum of the products of each effluent limitation factor times the applicable process feedstock rate.

Pollutant	Process Category	BAT Effluent Limit Factors (lb/kbbl)		Feedstock (kbbl/d)	Effluent Limitation (lb/d)	
		Daily Max.	30-d Average		Daily Max.	30-d Average
Phenolic Compounds (4AAP)	Crude	0.013	0.003	135.17	1.76	0.41
	Cracking & Coking	0.147	0.036	95.58	14.05	3.44
	Reforming & Alkylation	0.132	0.032	25.85	3.41	0.83
				TOTAL	19.22	4.67
				(kg/d)	8.72	2.12
Total Chromium	Crude	0.011	0.004	135.17	1.49	0.54
	Cracking & Coking	0.119	0.041	95.58	11.37	3.92
	Reforming & Alkylation	0.107	0.037	25.85	2.77	0.96
				TOTAL	15.63	5.42
				(kg/d)	7.09	2.46
Hexavalent Chromium	Crude	0.0007	0.0003	135.17	0.09	0.04
	Cracking & Coking	0.0076	0.0034	95.58	0.73	0.32
	Reforming & Alkylation	0.0069	0.0031	25.85	0.18	0.08
				TOTAL	1.00	0.45
				(kg/d)	0.45	0.20

STEP 6: Compare Amended BAT limitations for phenolic compounds (4AAP), total chromium, and hexavalent chromium with BPT limitations.

Except for daily maximum limitation for phenolic compounds, the above BAT limits are more stringent than the BPT limits calculated in STEP 4. Therefore, for these constituents, the above BAT limits, the BPT limit for phenolic compounds are considered for inclusion in the permit.

ConocoPhillips
Attachment 2
Reasonable Potential Analysis Results E-002

Beginning			Step 2	Step 3				Maximum Pollutant Concentration (MEC) (ug/L)	Step 4	Step 2	Step 3		Step 4.	Step 5.	Step 6.	Step 7 & 8.	Combined Effluent Final Result, Flow Weighted Averages			
	Constituent name	C (ug/L) Lowest (most stringent) Criteria (Enter "No Criteria" for no criteria)	Effluent Data Available?	Are all data points non-detects?	Minimum MDL (ug/L) If all data ND.	Enter the pollutant effluent detected max conc (ug/L)	If all data points are ND and MinDL>C, interim monitoring is required	(MEC= deteted max value; If all ND & MDL<C then MEC = MDL)	MEC vs. C Y if If MEC >= C, effluent limitation is required; 2 If MEC<C, go to Step 5	Background Data Available?	Are all B dats points non-detects?	If all data points ND Enter the min detection limit (MDL) (ug/L)	Enter the pollutant B detected max conc (ug/L)	If all B is ND, is MDL>C? (If Y, Go To Step 7)	B vs. C If B>C, effluent limitation is required	7) Review other information in the SIP page 4. Y if other information indicates limits are required If information is unavailable or insufficient: 8) the RWQCB shall establish interim monitoring requirements.	RPA Result	Reason	Daily Max, ug/l	Monthly Average, ug/l
A	B	C	D	E	F	G	H	I	J	L	M	N	O	P	Q	*	S	T		
1	Antimony	4300	Y	N		1.3		1.3	MEC<C, go to Step 5	Y			1.8		B<C, Step 7					
2	Arsenic [c]	36	Y	N		8.1		8.1	MEC<C, go to Step 5	Y			2.46		B<C, Step 7					
3	Beryllium	No Criteria	Y	Y	0.06		No Criteria	0.06	No Criteria	Y			0.215		No Criteria	No Criteria		Uo - No Criteria		
4	Cadmium [b]	1.383569587	Y			0.4		0.4	MEC<C, go to Step 5	Y			0.1265		B<C, Step 7					
5a	Chromium (III)	113.4671795	Y	N		12		12	MEC<C, go to Step 5						No detected value of B, Step 7					
5b	Chromium (VI) [b]	11.43451143	Y	N		1.6		1.6	MEC<C, go to Step 5	Y			4.4		B<C, Step 7					
6	Copper [b]	3.735	Y	N		20		20	Y	Y			2.45		B<C, Step 7		Y	MEC => C [20.000 ug/l vs 3.735 ug/l]	25.07	12.55
7	Lead [b]	1.249866176	Y	N		3.1		3.1	Y	Y			0.8		B<C, Step 7		Y	MEC => C [3.100 ug/l vs 1.250 ug/l]	9.48	3.16
8	Mercury (303d listed) [b]	0.025	Y	N		0.518		0.518	Y	Y			0.0056		B<C, Step 7		Y	MEC => C [0.518 ug/l vs 0.025 ug/l]	0.0448	0.0185
9	Nickel [b]	8.282828283	Y	N		13		13	Y	Y			3.7		B<C, Step 7		Y	MEC => C [13.000 ug/l vs 8.283 ug/l]	51.52	40.59
10	Selenium (303d listed) [b]	5	Y	N		49		49	Y	Y			0.39		B<C, Step 7		Y	MEC => C [49.000 ug/l vs 5.000 ug/l]	8.89	4.18
11	Silver [b]	1.06743994	Y	N		0.3		0.3	MEC<C, go to Step 5	Y			0.0618		B<C, Step 7					
12	Thallium	6.3	Y	N		0.3		0.3	MEC<C, go to Step 5	Y			0.21		B<C, Step 7					
13	Zinc [b]	84.33273609	Y	N		34		34	MEC<C, go to Step 5	Y			4.4		B<C, Step 7					
14	Cyanide [b]	1	Y	N		9		9	Y	Y	Y	0.4		FALSE	No detected value of B, Step 7		Y	MEC => C [9.000 ug/l vs 1.000 ug/l]	6.48000	3.19013
15	Asbestos	No Criteria					No Criteria		No Criteria						No Criteria	No Criteria		Uo - No Criteria		
16	2,3,7,8 TCDD (303d listed)	0.000000014	Y	N		1.3E-09		1.3E-09	MEC<C, go to Step 5	Y			0.000000071		Y	Y	Y	B > C [0.000 ug/l vs 0.000ug/l]		
17	Acrolein	780	Y	Y	1		MDL<=C, MDL=MEC	1	MEC<C, go to Step 5	Y	Y	0.5		FALSE	No detected value of B, Step 7					
18	Acrylonitrile	0.66	Y	Y	1		MDL > C, Interim Monitor, Go To Step 5			Y			0.03		B<C, Step 7			Effluent MDL > C, Interim Monitor		
19	Benzene	71	Y	Y	0.3		MDL<=C, MDL=MEC	0.3	MEC<C, go to Step 5	Y	Y	0.05		FALSE	No detected value of B, Step 7					
20	Bromoform	360	Y	N		12		12	MEC<C, go to Step 5	Y	Y	0.5		FALSE	No detected value of B, Step 7					
21	Carbon Tetrachloride	4.4	Y	Y	0.42		MDL<=C, MDL=MEC	0.42	MEC<C, go to Step 5	Y			0.06		B<C, Step 7					
22	Chlorobenzene	21000	Y	Y	0.3		MDL<=C, MDL=MEC	0.3	MEC<C, go to Step 5	Y	Y	0.5		FALSE	No detected value of B, Step 7					
23	Chlorodibromomethane	34	Y	N		43		43	Y	Y	Y	0.05		FALSE	No detected value of B, Step 7		Y	MEC => C [43.000000 ug/l vs 34.000000 ug/l]		
24	Chloroethane	No Criteria	Y	y	0.34		No Criteria	0.34	No Criteria	Y	Y	0.5		FALSE	No Criteria	No Criteria		Uo - No Criteria		
25	2-Chloroethylvinyl ether	No Criteria	Y	Y	0.32		No Criteria	0.32	No Criteria	Y	Y	0.5		FALSE	No Criteria	No Criteria		Uo - No Criteria		
26	Chloroform	No Criteria	Y	N		100	No Criteria	100	No Criteria	Y	Y	0.5		FALSE	No Criteria	No Criteria		Uo - No Criteria		
27	Dichlorobromomethane	46	Y	N		60		60	Y	Y	Y	0.05		FALSE	No detected value of B, Step 7		Y	MEC => C [60.000000 ug/l vs 46.000000 ug/l]		
28	1,1-Dichloroethane	No Criteria	Y	Y	0.34		No Criteria	0.34	No Criteria	Y	Y	0.05		FALSE	No Criteria	No Criteria		Uo - No Criteria		
29	1,2-Dichloroethane	99	Y	Y	0.2		MDL<=C, MDL=MEC	0.2	MEC<C, go to Step 5	Y			0.04		B<C, Step 7					
30	1,1-Dichloroethylene	3.2	Y	Y	0.49		MDL<=C, MDL=MEC	0.49	MEC<C, go to Step 5	Y	Y	0.5		FALSE	No detected value of B, Step 7					
31	1,2-Dichloropropane	39	Y	Y	0.2		MDL<=C, MDL=MEC	0.2	MEC<C, go to Step 5	Y	Y	0.05		FALSE	No detected value of B, Step 7					
32	1,3-Dichloropropylene	1700	Y	Y	0.2		MDL<=C, MDL=MEC	0.2	MEC<C, go to Step 5						No detected value of B, Step 7					
33	Ethylbenzene	29000	Y	Y	0.4		MDL<=C, MDL=MEC	0.4	MEC<C, go to Step 5	Y	Y	0.5		FALSE	No detected value of B, Step 7					
34	Methyl Bromide	4000	Y	N		0.5		0.5	MEC<C, go to Step 5	Y	Y	0.5		FALSE	No detected value of B, Step 7					
35	Methyl Chloride	No Criteria	Y	Y	0.46		No Criteria	0.46	No Criteria	Y	Y	0.5		FALSE	No Criteria	No Criteria		Uo - No Criteria		
36	Methylene Chloride	1600	Y	Y	0.4		MDL<=C, MDL=MEC	0.4	MEC<C, go to Step 5	Y			0.5		B<C, Step 7					
37	1,1,2,2-Tetrachloroethene	11	Y	Y	0.3		MDL<=C, MDL=MEC	0.3	MEC<C, go to Step 5	Y	Y	0.05		FALSE	No detected value of B, Step 7					
38	Tetrachloroethylene	8.85	Y	Y	0.44		MDL<=C, MDL=MEC	0.44	MEC<C, go to Step 5	Y	Y	0.05		FALSE	No detected value of B, Step 7					
39	Toluene	200000	Y	N		5.4		5.4	MEC<C, go to Step 5	Y	Y	0.3		FALSE	No detected value of B, Step 7					
40	1,2-Trans-Dichloroethylene	140000	Y	Y	0.43		MDL<=C, MDL=MEC	0.43	MEC<C, go to Step 5	Y	Y	0.5		FALSE	No detected value of B, Step 7					
41	1,1,1-Trichloroethane	No Criteria	Y	Y	0.49		No Criteria	0.49	No Criteria	Y	Y	0.5		FALSE	No Criteria	No Criteria		Uo - No Criteria		
42	1,1,2-Trichloroethane	42	Y	Y	0.3		MDL<=C, MDL=MEC	0.3	MEC<C, go to Step 5	Y	Y	0.05		FALSE	No detected value of B, Step 7					
43	Trichloroethylene	81	Y	Y	0.3		MDL<=C, MDL=MEC	0.3	MEC<C, go to Step 5	Y	Y	0.5		FALSE	No detected value of B, Step 7					
44	Vinyl Chloride	525	Y	Y	0.47		MDL<=C, MDL=MEC	0.47	MEC<C, go to Step 5	Y	Y	0.5		FALSE	No detected value of B, Step 7					
45	2-Chlorophenol	400	Y	Y	0.4		MDL<=C, MDL=MEC	0.4	MEC<C, go to Step 5	Y	Y	1.2		FALSE	No detected value of B, Step 7					
46	2,4-Dichlorophenol	790	Y	Y	0.7		MDL<=C, MDL=MEC	0.7	MEC<C, go to Step 5	Y	Y	1.3		FALSE	No detected value of B, Step 7					
47	2,4-Dimethylphenol	2300	Y	Y	0.9		MDL<=C, MDL=MEC	0.9	MEC<C, go to Step 5	Y	Y	1.3		FALSE	No detected value of B, Step 7					
48	2-Methyl- 4,6-Dinitrophenol	765	Y	Y	0.9		MDL<=C, MDL=MEC	0.9	MEC<C, go to Step 5	Y	Y	1.2		FALSE	No detected value of B, Step 7					
49	2,4-Dinitrophenol	14000	Y	Y	0.6		MDL<=C, MDL=MEC	0.6	MEC<C, go to Step 5	Y	Y	0.7		FALSE	No detected value of B, Step 7					
50	2-Nitrophenol	No Criteria	Y	Y	0.7		No Criteria	0.7	No Criteria	Y	Y	1.3		FALSE	No Criteria	No Criteria		Uo - No Criteria		
51	4-Nitrophenol	No Criteria	Y	Y	0.6		No Criteria	0.6	No Criteria	Y	Y	1.6		FALSE	No Criteria	No Criteria		Uo - No Criteria		
52	3-Methyl 4-Chlorophenol	No Criteria	Y	Y	0.5		No Criteria	0.5	No Criteria	Y	Y	1.1		FALSE	No Criteria	No Criteria		Uo - No Criteria		
53	Pentachlorophenol	7.9	Y	Y	0.9		MDL<=C, MDL=MEC	0.9	MEC<C, go to Step 5	Y	Y	1		FALSE	No detected value of B, Step 7					
54	Phenol	4600000	Y	Y	0.4		MDL<=C, MDL=MEC	0.4	MEC<C, go to Step 5	Y	Y	1.3		FALSE	No detected value of B, Step 7					
55	2,4,6-Trichlorophenol	6.5	Y	Y	0.6		All ND MDL<=C, MDL=MEC	0.6	MEC<C, go to Step 5	Y	Y	1.3		FALSE	No detected value of B, Step 7					
56	Acenaphthene	2700	Y	Y	0.17		All ND MDL<=C, MDL=MEC	0.17	MEC<C, go to Step 5	Y			0.0015		B<C, Step 7					
57	Acenaphthylene	No Criteria	Y	Y	0.03		No Criteria	0.03	No Criteria	Y			0.00053		No Criteria	No Criteria		Uo - No Criteria		
58	Anthracene	110000	Y	Y	0.03		All ND MDL<=C, MDL=MEC	0.03	MEC<C, go to Step 5	Y			0.0005		B<C, Step 7					
59	Benzidine	0.00054	Y	Y	1		MDL > C, Interim Monitor, Go To Step 5			Y	Y	0.0015		Y	No detected value of B, Step 7			Effluent MDL > C, Interim Monitor		
60	Benzo(a)Anthracene	0.049	Y	Y	0.09		MDL > C, Interim Monitor, Go To Step 5			Y			0.0053		B<C, Step 7			Effluent MDL > C, Interim Monitor		
61	Benzo(a)Pyrene	0.049	Y	Y	0.09		MDL > C, Interim Monitor, Go To Step 5			Y			0.00029		B<C, Step 7			Effluent MDL > C, Interim Monitor		
62	Benzo(b)Fluoranthene	0.049	Y	Y	0.06		MDL > C, Interim Monitor, Go To Step 5			Y			0.0046		B<C, Step 7			Effluent MDL > C, Interim Monitor		
63	Benzo(ghi)Perylene	No Criteria	Y	Y	0.06		No Criteria	0.06	No Criteria	Y			0.0027		No Criteria	No Criteria		Uo - No Criteria		
64	Benzo(k)Fluoranthene	0.049	Y	Y	0.06		MDL > C, Interim Monitor, Go To Step 5			Y			0.0015		B<C, Step 7			Effluent MDL > C, Interim Monitor		

ConocoPhillips
Attachment 2
Reasonable Potential Analysis Results E-002

Beginning			Step 2	Step 3					Step 4		Step 2	Step 3		Step 4	Step 5	Step 6	Step 7 & 8	Combined Effluent Final Result, Flow Weighted Averages			
	Constituent name	C (ug/L) Lowest (most stringent) Criteria (Enter "No Criteria" for no criteria)	Effluent Data Available?	Are all data points non-detects?	Minimum MDL (ug/L) if all data ND.	Enter the pollutant effluent detected max conc (ug/L)	If all data points are ND and MinDL>C, interim monitoring is required	Maximum Pollutant Concentration (MEC) (ug/L) (MEC= detected max value if all ND & MDL<C then MEC = MDL)	MEC vs. C Y if If MEC >= C, effluent limitation is required; 2 If MEC<C, go to Step 5	Background Data Available?	Are all B data points non-detects?	If all data points ND Enter the min detection limit (MDL) (ug/L)	Enter the pollutant B detected max conc (ug/L)	If all B is ND, Is MDL>C? (If Y, Go To Step 7)	B vs. C If B>C, effluent limitation is required	7) Review other information in the SIP page 4. Y if other information indicates limits are required. If information is unavailable or insufficient; 8) the RWQCB shall establish interim monitoring requirements.	RPA Result	Reason	Daily Max, ug/l	Monthly Average, ug/l
65	Bis(2-Chloroethoxy)Methane	No Criteria	Y	Y	0.9		No Criteria	0.9	No Criteria						FALSE	No Criteria	No Criteria		Uo - No Criteria		
66	Bis(2-Chloroethyl)Ether	1.4	Y	Y	0.7		All ND MDL<=C, MDL=MEC	0.7	MEC<C, go to Step 5	Y	Y	0.3			FALSE	No detected value of B, Step 7					
67	Bis(2-Chloroisopropyl)Ether	170000	Y	Y	0.6		All ND MDL<=C, MDL=MEC	0.6	MEC<C, go to Step 5							No detected value of B, Step 7					
68	Bis(2-Ethylhexyl)Phthalate	5.9	Y	Y	0.6		All ND MDL<=C, MDL=MEC	0.6	MEC<C, go to Step 5	Y	Y	0.5			FALSE	No detected value of B, Step 7					
69	4 Bromophenyl Phenyl Ether	No Criteria	Y	Y	0.4		No Criteria	0.4	No Criteria	Y	Y	0.23			FALSE	No Criteria	No Criteria		Uo - No Criteria		
70	Butylbenzyl Phthalate	5200	Y	Y	0.6		All ND MDL<=C, MDL=MEC	0.6	MEC<C, go to Step 5	Y	Y	0.52			FALSE	No detected value of B, Step 7					
71	2-Chloronaphthalene	4300	Y	Y	0.5		All ND MDL<=C, MDL=MEC	0.5	MEC<C, go to Step 5	Y	Y	0.3			FALSE	No detected value of B, Step 7					
72	4-Chlorophenyl Phenyl Ether	No Criteria	Y	Y	0.5		No Criteria	0.5	No Criteria	Y	Y	0.3			FALSE	No Criteria	No Criteria		Uo - No Criteria		
73	Chrysene	0.049	Y	Y	0.1		MDL > C, Interim Monitor, Go To Step 5			Y			0.0024			B<C, Step 7			Effluent MDL > C, Interim Monitor		
74	Dibenzo(a,h)Anthracene	0.049	Y	Y	0.04		All ND MDL<=C, MDL=MEC	0.04	MEC<C, go to Step 5	Y			0.00064			B<C, Step 7					
75	1,2-Dichlorobenzene	17000	Y	Y	0.2		All ND MDL<=C, MDL=MEC	0.2	MEC<C, go to Step 5	Y	Y	0.8			FALSE	No detected value of B, Step 7					
76	1,3-Dichlorobenzene	2600	Y	Y	0.3		All ND MDL<=C, MDL=MEC	0.3	MEC<C, go to Step 5	Y	Y	0.8			FALSE	No detected value of B, Step 7					
77	1,4-Dichlorobenzene	2600	Y	Y	0.3		All ND MDL<=C, MDL=MEC	0.3	MEC<C, go to Step 5	Y	Y	0.8			FALSE	No detected value of B, Step 7					
78	3,3 Dichlorobenzidine	0.077	Y	Y	0.3		MDL > C, Interim Monitor, Go To Step 5			Y	Y	0.001			FALSE	No detected value of B, Step 7			Effluent MDL > C, Interim Monitor		
79	Diethyl Phthalate	120000	Y	Y	0.7		All ND MDL<=C, MDL=MEC	0.7	MEC<C, go to Step 5	Y	Y	0.24			FALSE	No detected value of B, Step 7					
80	Dimethyl Phthalate	2900000	Y	Y	0.7		All ND MDL<=C, MDL=MEC	0.7	MEC<C, go to Step 5	Y	Y	0.24			FALSE	No detected value of B, Step 7					
81	Di-n-Butyl Phthalate	12000	Y	Y	1		All ND MDL<=C, MDL=MEC	1	MEC<C, go to Step 5	Y	Y	0.5			FALSE	No detected value of B, Step 7					
82	2,4-Dinitrotoluene	9.1	Y	Y	0.6		All ND MDL<=C, MDL=MEC	0.6	MEC<C, go to Step 5	Y	Y	0.27			FALSE	No detected value of B, Step 7					
83	2,6-Dinitrotoluene	No Criteria	Y	Y	0.6		No Criteria	0.6	No Criteria	Y	Y	0.28			FALSE	No Criteria	No Criteria		Uo - No Criteria		
84	Di-n-Octyl Phthalate	No Criteria	Y	Y	0.9		No Criteria	0.9	No Criteria	Y	Y	0.38			FALSE	No Criteria	No Criteria		Uo - No Criteria		
85	1,2-Diphenylhydrazine	0.54	Y	Y	0.6		MDL > C, Interim Monitor, Go To Step 5			Y			0.0037			B<C, Step 7			Effluent MDL > C, Interim Monitor		
86	Fluoranthene	370	Y	Y	0.03		All ND MDL<=C, MDL=MEC	0.03	MEC<C, go to Step 5	Y			0.011			B<C, Step 7					
87	Fluorene	14000	Y	Y	0.02		All ND MDL<=C, MDL=MEC	0.02	MEC<C, go to Step 5	Y			0.00208			B<C, Step 7					
88	Hexachlorobenzene	0.00077	Y	Y	0.4		MDL > C, Interim Monitor, Go To Step 5			Y			0.0000202			B<C, Step 7			Effluent MDL > C, Interim Monitor		
89	Hexachlorobutadiene	50	Y	Y	0.7		All ND MDL<=C, MDL=MEC	0.7	MEC<C, go to Step 5	Y	Y	0.3			FALSE	No detected value of B, Step 7					
90	Hexachlorocyclopentadiene	17000	Y	Y	0.4		All ND MDL<=C, MDL=MEC	0.4	MEC<C, go to Step 5	Y	Y	0.31			FALSE	No detected value of B, Step 7					
91	Hexachloroethane	8.9	Y	Y	0.6		All ND MDL<=C, MDL=MEC	0.6	MEC<C, go to Step 5	Y	Y	0.2			FALSE	No detected value of B, Step 7					
92	Indeno(1,2,3-cd)Pyrene	0.049	Y	Y	0.02		All ND MDL<=C, MDL=MEC	0.02	MEC<C, go to Step 5	Y			0.004			B<C, Step 7					
93	Isophorone	600	Y	Y	0.8		All ND MDL<=C, MDL=MEC	0.8	MEC<C, go to Step 5	Y	Y	0.3			FALSE	No detected value of B, Step 7					
94	Naphthalene	No Criteria	Y	N		1	No Criteria	1	No Criteria	Y			0.0023			No Criteria	No Criteria		Uo - No Criteria		
95	Nitrobenzene	1900	Y	Y	0.7		All ND MDL<=C, MDL=MEC	0.7	MEC<C, go to Step 5	Y	Y	0.25			FALSE	No detected value of B, Step 7					
96	N-Nitrosodimethylamine	8.1	Y	Y	0.6		All ND MDL<=C, MDL=MEC	0.6	MEC<C, go to Step 5	Y	Y	0.3			FALSE	No detected value of B, Step 7					
97	N-Nitrosodi-n-Propylamine	1.4	Y	Y	0.8		All ND MDL<=C, MDL=MEC	0.8	MEC<C, go to Step 5	Y	Y	0.001			FALSE	No detected value of B, Step 7					
98	N-Nitrosodiphenylamine	16	Y	Y	0.7		All ND MDL<=C, MDL=MEC	0.7	MEC<C, go to Step 5	Y	Y	0.001			FALSE	No detected value of B, Step 7					
99	Phenanthrene	No Criteria	Y	Y	0.03		No Criteria	0.03	No Criteria	Y			0.0061			No Criteria	No Criteria		Uo - No Criteria		
100	Pyrene	11000	Y	Y	0.03		All ND MDL<=C, MDL=MEC	0.03	MEC<C, go to Step 5	Y			0.0051			B<C, Step 7					
101	1,2,4-Trichlorobenzene	No Criteria	Y	Y	0.4		No Criteria	0.4	No Criteria	Y	Y	0.3			FALSE	No Criteria	No Criteria		Uo - No Criteria		
102	Aldrin	0.00014	Y	Y	0.003		MDL > C, Interim Monitor, Go To Step 5									No detected value of B, Step 7			Effluent MDL > C, Interim Monitor		
103	alpha-BHC	0.013	Y	Y	0.002		All ND MDL<=C, MDL=MEC	0.002	MEC<C, go to Step 5	Y			0.000496			B<C, Step 7					
104	beta-BHC	0.046	Y	Y	0.001		All ND MDL<=C, MDL=MEC	0.001	MEC<C, go to Step 5	Y			0.000413			B<C, Step 7					
105	gamma-BHC	0.063	Y	Y	0.001		All ND MDL<=C, MDL=MEC	0.001	MEC<C, go to Step 5	Y			0.0007034			B<C, Step 7					
106	delta-BHC	No Criteria	Y	Y	0.002		No Criteria	0.002	No Criteria	Y			0.000042			No Criteria	No Criteria		Uo - No Criteria		
107	Chlordane (303d listed)	0.00059	Y	Y	0.005		MDL > C, Interim Monitor, Go To Step 5			Y			0.00018			B<C, Step 7			Effluent MDL > C, Interim Monitor		
108	4,4'-DDT (303d listed)	0.00059	Y	Y	0.002		MDL > C, Interim Monitor, Go To Step 5			Y			0.000066			B<C, Step 7			Effluent MDL > C, Interim Monitor		
109	4,4'-DDE (linked to DDT)	0.00059	Y	Y	0.002		MDL > C, Interim Monitor, Go To Step 5			Y			0.000693			Y		Y	B > C [0.000693 ug/l vs 0.000590ug/l]		
110	4,4'-DDD	0.00084	Y	Y	0.003		MDL > C, Interim Monitor, Go To Step 5			Y			0.000313			B<C, Step 7			Effluent MDL > C, Interim Monitor		
111	Dieldrin (303d listed)	0.00014	Y	Y	0.002		MDL > C, Interim Monitor, Go To Step 5			Y			0.000264			Y		Y	B > C [0.000264 ug/l vs 0.000140ug/l]		
112	alpha-Endosulfan	0.0087	Y	Y	0.002		All ND MDL<=C, MDL=MEC	0.002	MEC<C, go to Step 5	Y			0.000031			B<C, Step 7					
113	beta-Endosulfan	0.0087	Y	Y	0.002		All ND MDL<=C, MDL=MEC	0.002	MEC<C, go to Step 5	Y			0.000069			B<C, Step 7					
114	Endosulfan Sulfate	240	Y	Y	0.002		All ND MDL<=C, MDL=MEC	0.002	MEC<C, go to Step 5	Y			0.0000619			B<C, Step 7					
115	Endrin	0.0023	Y	Y	0.002		All ND MDL<=C, MDL=MEC	0.002	MEC<C, go to Step 5	Y			0.000036			B<C, Step 7					
116	Endrin Aldehyde	0.81	Y	Y	0.002		All ND MDL<=C, MDL=MEC	0.002	MEC<C, go to Step 5							No detected value of B, Step 7					
117	Heptachlor	0.00021	Y	Y	0.003		MDL > C, Interim Monitor, Go To Step 5			Y			0.000019			B<C, Step 7			Effluent MDL > C, Interim Monitor		
118	Heptachlor Epoxide	0.00011	Y	Y	0.002		MDL > C, Interim Monitor, Go To Step 5			Y			0.000094			B<C, Step 7			Effluent MDL > C, Interim Monitor		
119-125	PCBs sum (2)	0.00017	Y	N		0.000345		0.000345	Y							No detected value of B, Step 7		Y	MEC => C [0.000345 ug/l vs 0.000170 ug/l]		
126	Toxaphene	0.0002	Y	Y	0.2		MDL > C, Interim Monitor, Go To Step 5									No detected value of B, Step 7			Effluent MDL > C, Interim Monitor		
	Tributyltin	0.01					No Effluent Data			Y	Y	0.001			FALSE	No detected value of B, Step 7			Ud-No Effluent Data		
	Total PAHs	15					No Effluent Data			Y			0.062	B MDL>C, Monitoring Required		B<C, Step 7		0	No Effluent Data on Total PAHs - Individual PAHs above.		

a. The most stringent of salt and fresh water criteria were selected for this analysis.

b. According to Table 1 of Section (b)(1) of CTR (40CFR 131.38), those criteria should use Basin Plan objectives; criteria for Se and CN are specified by the NTR.

c. Criteria for copper is taken from CTR. CTR criteria for copper is expressed as dissolved metals. The copper criter in the table is adjusted by dividing a factor of 0.83 to convert the dissolved to total metal concentration.

The freshwater criteria for Selenium is taken from NTR.

d. Acronyms in the "Final Result" column

Ud: Cannot determine reasonable potential due to the absence of data, or because Minimum DL is greater than water quality objective or CTR criteria

Uo: No criteria available

IM: Interim monitoring is required

ConocoPhillips
Attachment 3
WQBEL Calculations E-002

Beginning			Acute ECA	Chronic ECA	Human Health ECA	CV, by SIP Guidance	Acute ECA (Sigma^2)	Acute ECA Sigma	Chronic ECA (Sigma^2)	Chronic ECA Sigma	Acute ECA Multiplier	Chronic ECA Multiplier	Acute LTA	Chronic LTA	AMEL Sigma^2	AMEL Sigma	MDEL Multiplier	AMEL Multiplier	MDEL	AMEL	MDEL Human Health	AMEL Human Health	Daily Maximum	Monthly Average
	Constituent name	RP?																						
A	B	C	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG			AH	AI	AJ	AK	AL	AM	AN
1	Antimony																							
2	Arsenic [b]																							
3	Beryllium																							
4	Cadmium [b]																							
5a	Chromium (III)																							
5b	Chromium (VI) [b]																							
6	Copper [c]	Y	35.7813253	15.29939759	No HH Criteria	0.594344	0.302505	0.550005	0.084627	0.290907	0.323681	0.530287	11.58102	8.113071	0.084627	0.290907	3.089652	1.546863	25.067	12.550			25.07	12.55
7	Lead [b]	Y	313.5378042	5.298691763	No HH Criteria	1.76467	1.414411	1.18929	0.575779	0.758801	0.127571	0.228303	39.9983	1.209707	0.575779	0.758801	7.838779	2.61258	9.483	3.160			9.48	3.16
8	Mercury (303d listed) [b]	Y	2.1	0.025	0.051	0.876367	0.56986	0.754891	0.175637	0.41909	0.229708	0.411895	0.482387	0.010297	0.175637	0.41909	4.353351	1.82501	0.045	0.019	0.12165	0.05100	0.0448	0.0188
9	Nickel [b]	Y	714.1747475	49.52828283	45966.7	0.604383	0.311359	0.557995	0.087388	0.295614	0.319111	0.525238	227.9007	26.01412	0.087388	0.295614	3.13371	1.556736	81.521	40.497	92530.97206	45966.70000	81.52	40.50
10	Selenium (303d listed) [b]	Y	20	5	No HH Criteria	0.546482	0.26132	0.511195	0.072005	0.268338	0.347018	0.555353	6.940359	2.776767	0.072005	0.268338	2.881695	1.499922	8.002	4.165			8.00	4.16
11	Silver [b]																							
12	Thallium																							
13	Zinc [b]																							
14	Cyanide [b]	Y	6.4	6.4	2199996.4	0.6	0.307485	0.554513	0.086178	0.29356	0.321083	0.527433	2.054933	3.375574	0.086178	0.29356	3.114457	1.552425	6.400	3.190	4413608.92343	2199996.40000	6.40	3.19
15	Asbestos																							
16	2,3,7,8 TCDD (303d listed)	Y			0.000000014	0.8	0.307485	0.554513	0.086178	0.29356	0.321083	0.527433			0.086178	0.29356	3.114457	1.552425	0.000	0.000	0.00000002809	0.000000014		
17	Acrolein																							
18	Acrylonitrile																							
19	Benzene																							
20	Bromoform																							
21	Carbon Tetrachloride																							
22	Chlorobenzene																							
23	Chlorodibromomethane	Y			339.55	0.546482	0.26132	0.511195	0.072005	0.268338	0.347018	0.555353			0.072005	0.268338	2.881695	1.499922	0.000	0.000	652.35388	339.55000		
24	Chloroethane																							
25	2-Chloroethylvinyl ether																							
26	Chloroform																							
27	Dichlorobromomethane	Y			459.55	0.63073	0.334914	0.578717	0.094815	0.30792	0.307697	0.512316			0.094815	0.30792	3.24995	1.582682	0.000	0.000	943.66073	459.55000		
28	1,1-Dichloroethane																							
29	1,2-Dichloroethane																							
30	1,1-Dichloroethylene																							
31	1,2-Dichloropropane																							
32	1,3-Dichloropropylene																							
33	Ethylbenzene																							
34	Methyl Bromide																							
35	Methyl Chloride																							
36	Methylene Chloride																							
37	1,1,2,2-Tetrachloroethane																							
38	Tetrachloroethylene																							
39	Toluene																							
40	1,2-Trans-Dichloroethylene																							
41	1,1,1-Trichloroethane																							
42	1,1,2-Trichloroethane																							
43	Trichloroethylene																							
44	Vinyl Chloride																							
45	2-Chlorophenol																							
46	2,4-Dichlorophenol																							
47	2,4-Dimethylphenol																							
48	2-Methyl- 4,6-Dinitrophenol																							
49	2,4-Dinitrophenol																							
50	2-Nitrophenol																							
51	4-Nitrophenol																							
52	3-Methyl 4-Chlorophenol																							
53	Pentachlorophenol																							
54	Phenol																							
55	2,4,6-Trichlorophenol																							
56	Acenaphthene																							
57	Acenaphthylene																							
58	Anthracene																							
59	Benzidine																							
60	Benzo(a)Anthracene																							
61	Benzo(a)Pyrene																							
62	Benzo(b)Fluoranthene																							
63	Benzo(ghi)Perylene																							
64	Benzo(k)Fluoranthene																							

ConocoPhillips
Attachment 3
WQBEL Calculations E-002

Beginning			Acute ECA	Chronic ECA	Human Health ECA	CV, by SIP Guidance	Acute ECA (Sigma^2)	Acute ECA Sigma	Chronic ECA (Sigma^2)	Chronic ECA Sigma	Acute ECA Multiplier	Chronic ECA Multiplier	Acute LTA	Chronic LTA	AMEL Sigma^2	AMEL Sigma	MDEL Multiplier	AMEL Multiplier	MDEL	AMEL	MDEL Human Health	AMEL Human Health	Daily Maximum	Monthly Average	
	Constituent name	RP?																							
65	Bis(2-Chloroethoxy)Methane																								
66	Bis(2-Chloroethyl)Ether																								
67	Bis(2-Chloroisopropyl)Ether																								
68	Bis(2-Ethylhexyl)Phthalate																								
69	4-Bromophenyl Phenyl Ethe																								
70	Butylbenzyl Phthalate																								
71	2-Chloronaphthalene																								
72	4-Chlorophenyl Phenyl Ethe																								
73	Chrysene																								
74	Dibenzo(a,h)Anthracene																								
75	1,2-Dichlorobenzene																								
76	1,3-Dichlorobenzene																								
77	1,4-Dichlorobenzene																								
78	3,3 Dichlorobenzidine																								
79	Diethyl Phthalate																								
80	Dimethyl Phthalate																								
81	Di-n-Butyl Phthalate																								
82	2,4-Dinitrotoluene																								
83	2,6-Dinitrotoluene																								
84	Di-n-Octyl Phthalate																								
85	1,2-Diphenylhydrazine																								
86	Fluoranthene																								
87	Fluorene																								
88	Hexachlorobenzene																								
89	Hexachlorobutadiene																								
90	Hexachlorocyclopentadiene																								
91	Hexachloroethane																								
92	Indeno(1,2,3-cd)Pyrene																								
93	Isophorone																								
94	Naphthalene																								
95	Nitrobenzene																								
96	N-Nitrosodimethylamine																								
97	N-Nitrosodi-n-Propylamine																								
98	N-Nitrosodiphenylamine																								
99	Phenanthrene																								
100	Pyrene																								
101	1,2,4-Trichlorobenzene																								
102	Aldrin																								
103	alpha-BHC																								
104	beta-BHC																								
105	gamma-BHC																								
106	delta-BHC																								
107	Chlordane (303d listed)																								
108	4,4'-DDT (303d listed)																								
109	4,4'-DDE (linked to DDT)	Y	FALSE	0	0.00059	0.6	0.307485	0.554513	0.086178	0.29356	0.321083	0.527433	0.00	0	0.086178	0.29356	3.114457	1.552425	0.000	0.000	0.00118	0.00059			
110	4,4'-DDD																								
111	Dieldrin (303d listed)	Y	2.397624	0.016624	0.00014	0.6	0.307485	0.554513	0.086178	0.29356	0.321083	0.527433	0.769837	0.008768	0.086178	0.29356	3.114457	1.552425	0.027	0.014	0.00028	0.00014			
112	alpha-Endosulfan																								
113	beta-Endosulfan																								
114	Endosulfan Sulfate																								
115	Endrin																								
116	Endrin Aldehyde																								
117	Heptachlor																								
118	Heptachlor Epoxide																								
119-125	PCBs sum (2)	Y		0.14000	0.00170	0.60000	0.30748	0.55451	0.08618	0.29356	0.32108	0.52743		0.073841	0.08618	0.29356	3.114457	1.552425	0.22997	0.11463	0.00341	0.00170			
126	Toxaphene																								
	Tributyltin																								
	Total PAHs																								

ConocoPhillips
Attachment 4
Mercury Mass Limit E-002

MERCURY MASS LIMIT COMPUTATIONS					
Date [1]	Monthly Average Flow (mgd)	Mercury Concentration, C, ug/l [1]	Monthly Mass load, kg/month	12-Month Moving Average Mercury Load, kg/month	Natural log (ln) of 12-Month Moving Average Mercury Load (no units)
Jan-01	2.31	0.0195	0.005		
Feb-01	3.96	0.018	0.008		
Mar-01	2.76	0.0215	0.007		
Apr-01	2.77	0.0665	0.021		
May-01	1.97	0.052	0.012		
Jun-01	2.33	0.182	0.049		
Jul-01	1.89	0.043	0.009		
Aug-01	1.94	0.037	0.008		
Sep-01	1.77	0.017	0.003		
Oct-01	2.05	0.012	0.003		
Nov-01	2.5	0.02	0.006		
Dec-01	3.89	0.01	0.004	**0.011**	(4.4788)
Jan-02	2.71	0.032	0.010	**0.012**	(4.4442)
Feb-02	2.5	0.058	0.017	**0.012**	(4.3857)
Mar-02	2.47	0.057	0.016	**0.013**	(4.3249)
Apr-02	1.99	0.011	0.003	**0.012**	(4.4500)
May-02	2.76	0.063	0.020	**0.012**	(4.3930)
Jun-02	2.79	0.028	0.009	**0.009**	(4.7055)
Jul-02	2.73	0.017	0.005	**0.009**	(4.7432)
Aug-02	2.33	0.01	0.003	**0.008**	(4.7980)
Sep-02	2.49	0.023	0.007	**0.009**	(4.7669)
Oct-02	2.73	0.013	0.004	**0.009**	(4.7547)
Nov-02	2.88	0.0057	0.002	**0.008**	(4.7928)
Dec-02	4.6	0.0054	0.003	**0.008**	(4.8092)
Jan-03	3.1	0.0057	0.002	**0.007**	(4.8939)
Feb-03	2.67	0.018	0.006	**0.007**	(5.0265)
Mar-03	2.12	0.0036	0.001	**0.005**	(5.2429)
Apr-03	2.65	0.0056	0.002	**0.005**	(5.2558)
May-03	2.86	0.0056	0.002	**0.004**	(5.5986)
Jun-03	2.83	0.018	0.006	**0.003**	(5.6716)
Jul-03	2.65	0.014	0.004	**0.003**	(5.6979)
Aug-03	2.66	0.031	0.009	**0.004**	(5.5416)
Sep-03	2.65	0.0093	0.003	**0.004**	(5.6247)
Oct-03	2.61	0.025	0.008	**0.004**	(5.5486)
Nov-03	2.19	0.012	0.003	**0.004**	(5.5246)
Dec-03	3.17	0.013	0.005	**0.004**	(5.4860)
Jan-04	2.95	0.007	0.002	**0.004**	(5.4791)
Feb-04	3.52	0.009	0.004	**0.004**	(5.5175)
Mar-04	2.21	0.011	0.003	**0.004**	(5.4784)
Apr-04	2.33	0.005	0.001	**0.004**	(5.4857)
May-04	2.36	0.0078	0.002	**0.004**	(5.4802)
Jun-04	2.13	0.008	0.002	**0.004**	(5.5614)
Jul-04	2.67	0.0094	0.003	**0.004**	(5.5919)
Aug-04	2.56	0.0065	0.002	**0.003**	(5.7774)
			Average		(5.1313)
			Standard Deviation		0.4703
			99.87th percentile		0.0242
			Mercury data is log normal		

6/16/2005

ConocoPhillips
Attachment 5
Reasonable Potential Analysis Results E-003

Beginning			Step 2	Step 3					Step 4	Step 2	Step 3		Step 4	Step 5	Step 6	Step 7 & 8	Combined Effluent Final Result, Flow Weighted Averages			
	Constituent name	C (ug/L) Lowest (most stringent) Criteria (Enter "No Criteria" for no criteria)	Effluent Data Available?	Are all data points non-detects?	Minimum MDL (ug/L) If all data ND.	Enter the pollutant effluent detected max conc (ug/L)	If all data points are ND and MinDL>C, interim monitoring is required	Maximum Pollutant Concentration (MEC) (ug/L) (MEC= detected max value; If all ND & MDL<C then MEC = MDL)	MEC vs. C Y if If MEC >= C, effluent limitation is required; 2 If MEC<C, go to Step 5	Background Data Available?	Are all B data points non-detects?	If all data points ND Enter the min detection limit (MDL) (ug/L)	Enter the pollutant B detected max conc (ug/L)	If all B is ND, is MDL>C? (If Y, Go To Step 7)	B vs. C If B>C, effluent limitation is required	7) Review other information in the SIP page 4. Y If other information indicates limits are required. If information is unavailable or insufficient, 8) the RWQCB shall establish interim monitoring requirements.	RPA Result	Reason	Daily Max. ug/l	Monthly Average. ug/l
A	B	C	D	E	F	G	H	I	J	L	M	N	O	P	Q	r	S	T		
1	Antimony	4300	Y	N		1.2		1.2	MEC<C, go to Step 5	Y			1.8		B<C, Step 7					
2	Arsenic [5]	36	Y	N		37		37		Y			2.45		B<C, Step 7		Y	MEC => C [37.000 ug/l vs 36.000 ug/l]	59.15608	29.47652
3	Beryllium	No Criteria	Y	Y	0.06		No Criteria	0.06	No Criteria	Y			0.215		No Criteria	No Criteria		Uo - No Criteria		
4	Cadmium [5]	1.353598857	Y			0.1		0.1	MEC<C, go to Step 5	Y			0.1265		B<C, Step 7					
5a	Chromium (III)	113.4671795		N			No Effluent Data								No detected value of B, Step 7			Ud, No effluent data, no background data		
5b	Chromium (VI) [5]	11.43451143	Y	Y	3.5		MDL<=C, MDL<MEC	3.5	MEC<C, go to Step 5	Y			4.4		B<C, Step 7					
6	Copper [5]	3.735	Y	N		12		12	Y	Y			2.45		B<C, Step 7		Y	MEC => C [12.000 ug/l vs 3.735 ug/l]	5.78	2.88
7	Lead [5]	1.249859176	Y	N		1.4		1.4	Y	Y			0.8		B<C, Step 7		Y	MEC => C [1.400 ug/l vs 1.250 ug/l]	2.05	1.02
8	Mercury (303d listed) [4]	0.025	Y	N		0.016		0.016	MEC<C, go to Step 5	Y			0.0086		B<C, Step 7					
9	Nickel [5]	8.282828283	Y	N		41		41	Y	Y			3.7		B<C, Step 7		Y	MEC => C [41.000 ug/l vs 8.283 ug/l]	13.81	6.78
10	Selenium (303d listed) [3]	5	Y	N		22		22	Y	Y			0.39		B<C, Step 7		Y	MEC => C [22.000 ug/l vs 5.000 ug/l]	8.21	4.09
11	Silver [5]	1.06743994	Y	Y	0.02		MDL<=C, MDL<MEC	0.02	MEC<C, go to Step 5	Y			0.0518		B<C, Step 7					
12	Thallium	6.3	Y	Y	0.03		MDL<=C, MDL<MEC	0.03	MEC<C, go to Step 5	Y			0.21		B<C, Step 7					
13	Zinc [5]	64.33273609	Y	N		80		80	Y	Y			4.4		B<C, Step 7		Y	MEC => C [80.000 ug/l vs 64.333 ug/l]	64.33	32.07
14	Cyanide [5]	1	Y	Y	10		MDL > C, Interim Monitor, Go To Step 5			Y	Y	0.4		FALSE	No detected value of B, Step 7			Effluent MDL > C, Interim Monitor		
15	Asbestos	No Criteria					No Criteria		No Criteria						No Criteria	No Criteria		Uo - No Criteria		
16	2,3,7,8 TCDD (303d listed)	0.000000014	Y	N		0.000000058		0.000000058	Y	Y			0.000000071		Y	Y	Y	MEC => C [0.000 ug/l vs 0.000 ug/l]		
17	Acrolein	780	Y	Y	1		MDL<=C, MDL<MEC	1	MEC<C, go to Step 5	Y	Y	0.5		FALSE	No detected value of B, Step 7					
18	Acrylonitrile	0.66	Y	Y	1		MDL > C, Interim Monitor, Go To Step 5			Y			0.03		B<C, Step 7			Effluent MDL > C, Interim Monitor		
19	Benzene	71	Y	Y	0.3		MDL<=C, MDL<MEC	0.3	MEC<C, go to Step 5	Y	Y	0.05		FALSE	No detected value of B, Step 7					
20	Bromoform	360	Y	Y	0.2		MDL<=C, MDL<MEC	0.2	MEC<C, go to Step 5	Y	Y	0.5		FALSE	No detected value of B, Step 7					
21	Carbon Tetrachloride	4.4	Y	Y	0.42		MDL<=C, MDL<MEC	0.42	MEC<C, go to Step 5	Y			0.08		B<C, Step 7					
22	Chlorobenzene	21000	Y	Y	0.3		MDL<=C, MDL<MEC	0.3	MEC<C, go to Step 5	Y	Y	0.5		FALSE	No detected value of B, Step 7					
23	Chlorodibromomethane	34	Y	Y	0.3		MDL<=C, MDL<MEC	0.3	MEC<C, go to Step 5	Y	Y	0.05		FALSE	No detected value of B, Step 7					
24	Chloroethane	No Criteria	Y	Y	0.34		No Criteria	0.34	No Criteria	Y	Y	0.5		FALSE	No Criteria	No Criteria		Uo - No Criteria		
25	2-Chloroethylvinyl ether	No Criteria	Y	Y	0.32		No Criteria	0.32	No Criteria	Y	Y	0.5		FALSE	No Criteria	No Criteria		Uo - No Criteria		
26	Chloroform	No Criteria	Y	Y	0.31		No Criteria	0.31	No Criteria	Y	Y	0.5		FALSE	No Criteria	No Criteria		Uo - No Criteria		
27	Dichlorobromomethane	46	Y	Y	0.2		MDL<=C, MDL<MEC	0.2	MEC<C, go to Step 5	Y	Y	0.05		FALSE	No detected value of B, Step 7					
28	1,1-Dichloroethane	No Criteria	Y	Y	0.34		No Criteria	0.34	No Criteria	Y	Y	0.05		FALSE	No Criteria	No Criteria		Uo - No Criteria		
29	1,2-Dichloroethane	99	Y	Y	0.2		MDL<=C, MDL<MEC	0.2	MEC<C, go to Step 5	Y			0.04		B<C, Step 7					
30	1,1-Dichloroethylene	3.2	Y	Y	0.49		MDL<=C, MDL<MEC	0.49	MEC<C, go to Step 5	Y	Y	0.5		FALSE	No detected value of B, Step 7					
31	1,2-Dichloropropane	39	Y	Y	0.2		MDL<=C, MDL<MEC	0.2	MEC<C, go to Step 5	Y	Y	0.05		FALSE	No detected value of B, Step 7					
32	1,3-Dichloropropylene	1700	Y	Y	0.2		MDL<=C, MDL<MEC	0.2	MEC<C, go to Step 5						No detected value of B, Step 7					
33	Ethylbenzene	29000	Y	Y	0.4		MDL<=C, MDL<MEC	0.4	MEC<C, go to Step 5	Y	Y	0.5		FALSE	No detected value of B, Step 7					
34	Methyl Bromide	4000	Y	Y	0.42		MDL<=C, MDL<MEC	0.42	MEC<C, go to Step 5	Y	Y	0.5		FALSE	No detected value of B, Step 7					
35	Methyl Chloride	No Criteria	Y	Y	0.46		No Criteria	0.46	No Criteria	Y	Y	0.5		FALSE	No Criteria	No Criteria		Uo - No Criteria		
36	Methylene Chloride	1900	Y	Y	0.4		MDL<=C, MDL<MEC	0.4	MEC<C, go to Step 5	Y			0.5		B<C, Step 7					
37	1,1,2,2-Tetrachloroethane	11	Y	Y	0.3		MDL<=C, MDL<MEC	0.3	MEC<C, go to Step 5	Y	Y	0.05		FALSE	No detected value of B, Step 7					
38	Tetrachloroethylene	8.85	Y	Y	0.44		MDL<=C, MDL<MEC	0.44	MEC<C, go to Step 5	Y	Y	0.05		FALSE	No detected value of B, Step 7					
39	Toluene	200000	Y	Y	0.32		MDL<=C, MDL<MEC	0.32	MEC<C, go to Step 5	Y	Y	0.3		FALSE	No detected value of B, Step 7					
40	1,2-Trans-Dichloroethylene	140000	Y	Y	0.43		MDL<=C, MDL<MEC	0.43	MEC<C, go to Step 5	Y	Y	0.5		FALSE	No detected value of B, Step 7					
41	1,1,1-Trichloroethane	No Criteria	Y	Y	0.49		No Criteria	0.49	No Criteria	Y	Y	0.5		FALSE	No Criteria	No Criteria		Uo - No Criteria		
42	1,1,2-Trichloroethane	42	Y	Y	0.3		MDL<=C, MDL<MEC	0.3	MEC<C, go to Step 5	Y	Y	0.05		FALSE	No detected value of B, Step 7					
43	Trichloroethylene	81	Y	Y	0.3		MDL<=C, MDL<MEC	0.3	MEC<C, go to Step 5	Y	Y	0.5		FALSE	No detected value of B, Step 7					
44	Vinyl Chloride	525	Y	Y	0.47		MDL<=C, MDL<MEC	0.47	MEC<C, go to Step 5	Y	Y	0.5		FALSE	No detected value of B, Step 7					
45	2-Chlorophenol	400	Y	Y	0.6		MDL<=C, MDL<MEC	0.6	MEC<C, go to Step 5	Y	Y	1.2		FALSE	No detected value of B, Step 7					
46	2,4-Dichlorophenol	790	Y	Y	0.7		MDL<=C, MDL<MEC	0.7	MEC<C, go to Step 5	Y	Y	1.3		FALSE	No detected value of B, Step 7					
47	2,4-Dimethylphenol	2300	Y	Y	0.9		MDL<=C, MDL<MEC	0.9	MEC<C, go to Step 5	Y	Y	1.3		FALSE	No detected value of B, Step 7					
48	2-Methyl- 4,6-Dinitrophenol	765	Y	Y	0.9		MDL<=C, MDL<MEC	0.9	MEC<C, go to Step 5	Y	Y	1.2		FALSE	No detected value of B, Step 7					
49	2,4-Dinitrophenol	14000	Y	Y	0.6		MDL<=C, MDL<MEC	0.6	MEC<C, go to Step 5	Y	Y	0.7		FALSE	No detected value of B, Step 7					
50	2-Nitrophenol	No Criteria	Y	Y	0.7		No Criteria	0.7	No Criteria	Y	Y	1.3		FALSE	No Criteria	No Criteria		Uo - No Criteria		
51	4-Nitrophenol	No Criteria	Y	Y	0.6		No Criteria	0.6	No Criteria	Y	Y	1.6		FALSE	No Criteria	No Criteria		Uo - No Criteria		
52	3-Methyl 4-Chlorophenol	No Criteria	Y	Y	0.5		No Criteria	0.5	No Criteria	Y	Y	1.1		FALSE	No Criteria	No Criteria		Uo - No Criteria		
53	Pentachlorophenol	7.9	Y	Y	0.9		MDL<=C, MDL<MEC	0.9	MEC<C, go to Step 5	Y	Y	1		FALSE	No detected value of B, Step 7					
54	Phenol	4600000		Y			MDL > C, Interim Monitor, Go To Step 5			Y	Y	1.3		FALSE	No detected value of B, Step 7			Ud-No Effluent Data		
55	2,4,6-Trichlorophenol	6.5	Y	Y	0.6		All ND MDL<=C, MDL<MEC	0.6	MEC<C, go to Step 5	Y	Y	1.3		FALSE	No detected value of B, Step 7					
56	Acenaphthene	2700	Y	Y	0.17		All ND MDL<=C, MDL<MEC	0.17	MEC<C, go to Step 5	Y			0.0015		B<C, Step 7					
57	Acenaphthylene	No Criteria	Y	Y	0.03		No Criteria	0.03	No Criteria	Y			0.00053		No Criteria	No Criteria		Uo - No Criteria		
58	Anthracene	110000	Y	Y	0.16		All ND MDL<=C, MDL<MEC	0.16	MEC<C, go to Step 5	Y			0.0005		B<C, Step 7					
59	Benzidine	0.00054	Y	Y	1		MDL > C, Interim Monitor, Go To Step 5			Y	Y	0.0015		Y	No detected value of B, Step 7			Effluent MDL > C, Interim Monitor		
60	Benzo(a)Anthracene	0.049	Y	Y	0.12		MDL > C, Interim Monitor, Go To Step 5			Y			0.0053		B<C, Step 7			Effluent MDL > C, Interim Monitor		
61	Benzo(a)Pyrene	0.049	Y	Y	0.09		MDL > C, Interim Monitor, Go To Step 5			Y			0.00029		B<C, Step 7			Effluent MDL > C, Interim Monitor		
62	Benzo(b)Fluoranthene	0.049	Y	Y	0.11		MDL > C, Interim Monitor, Go To Step 5			Y			0.0046		B<C, Step 7			Effluent MDL > C, Interim Monitor		
63	Benzo(ghi)Perylene	No Criteria	Y	Y	0.06		No Criteria	0.06	No Criteria	Y			0.0027		No Criteria	No Criteria		Uo - No Criteria		
64	Benzo(k)Fluoranthene	0.049	Y	Y	0.16		MDL > C, Interim Monitor, Go To Step 5			Y			0.0015		B<C, Step 7			Effluent MDL > C, Interim Monitor		

ConocoPhillips
Attachment 5
Reasonable Potential Analysis Results E-003

Beginning			Step 2	Step 3				Maximum Pollutant Concentration (MEC) (ug/L)	Step 4	Step 2	Step 3		Step 4	Step 5	Step 6	Step 7 & 8	Combined Effluent Final Result, Flow Weighted Averages			
		C (ug/L)							MEC vs. C						B vs. C	7) Review other information in the SIP page 4. Y if other information indicates limits are required. If information is unavailable or insufficient: 8) the RWQCB shall establish interim monitoring requirements.				
	Constituent name	Lowest (most stringent) Criteria (Enter "No Criteria" for no criteria)	Effluent Data Available?	Are all data points non-detects?	Minimum MDL (ug/L) if all data ND	Enter the pollutant effluent detected max conc (ug/L)	If all data points are ND and MinDL>C, interim monitoring is required	(MEC= detected max value; If all ND & MDL<C then MEC = MDL)	Y if If MEC >= C, effluent limitation is required: 2 If MEC<C, go to Step 5	Background Data Available?	Are all B data points non-detects?	If all data points ND Enter the min detection limit (MDL) (ug/L)	Enter the pollutant B detected max conc (ug/L)	If all B is ND, is MDL>C? (If Y, Go To Step 7)	If B>C, effluent limitation is required	RPA Result	Reason	Daily Max, ug/l	Monthly Average, ug/l
65	Bis(2-Chloroethoxy)Methane	No Criteria	Y	Y	0.9		No Criteria	0.9	No Criteria					FALSE	No Criteria	No Criteria			
66	Bis(2-Chloroethyl)Ether	1.4	Y	Y	0.7		All ND MDL<=C, MDL=MEC	0.7	MEC<C, go to Step 5	Y	Y	0.3		FALSE	No detected value of B, Step 7				
67	Bis(2-Chloroisopropyl)Ether	170000	Y	Y	0.6		All ND MDL<=C, MDL=MEC	0.6	MEC<C, go to Step 5						No detected value of B, Step 7				
68	Bis(2-Ethylhexyl)Phthalate	5.9	Y	Y	0.8		All ND MDL<=C, MDL=MEC	0.8	MEC<C, go to Step 5	Y	Y	0.5		FALSE	No detected value of B, Step 7				
69	4-Bromophenyl Phenyl Ether	No Criteria	Y	Y	0.4		No Criteria	0.4	No Criteria	Y	Y	0.23		FALSE	No Criteria	No Criteria	Uo - No Criteria		
70	Butylbenzyl Phthalate	5200	Y	Y	0.8		All ND MDL<=C, MDL=MEC	0.8	MEC<C, go to Step 5	Y	Y	0.52		FALSE	No detected value of B, Step 7				
71	2-Chloronaphthalene	4300	Y	Y	0.5		All ND MDL<=C, MDL=MEC	0.5	MEC<C, go to Step 5	Y	Y	0.3		FALSE	No detected value of B, Step 7				
72	4-Chlorophenyl Phenyl Ether	No Criteria	Y	Y	0.5		No Criteria	0.5	No Criteria	Y	Y	0.3		FALSE	No Criteria	No Criteria	Uo - No Criteria		
73	Chrysene	0.049	Y	Y	0.14		MDL > C, Interim Monitor, Go To Step 5			Y			0.0024		B<C, Step 7		Effluent MDL > C, Interim Monitor		
74	Dibenzo(a,h)Anthracene	0.049	Y	Y	0.04		All ND MDL<=C, MDL=MEC	0.04	MEC<C, go to Step 5	Y			0.00064		B<C, Step 7				
75	1,2-Dichlorobenzene	17000	Y	Y	0.2		All ND MDL<=C, MDL=MEC	0.2	MEC<C, go to Step 5	Y	Y	0.8		FALSE	No detected value of B, Step 7				
76	1,3-Dichlorobenzene	2600	Y	Y	0.3		All ND MDL<=C, MDL=MEC	0.3	MEC<C, go to Step 5	Y	Y	0.8		FALSE	No detected value of B, Step 7				
77	1,4-Dichlorobenzene	2600	Y	Y	0.3		All ND MDL<=C, MDL=MEC	0.3	MEC<C, go to Step 5	Y	Y	0.8		FALSE	No detected value of B, Step 7				
78	3,3-Dichlorobenzidine	0.077	Y	Y	0.3		MDL > C, Interim Monitor, Go To Step 5			Y	Y	0.001		FALSE	No detected value of B, Step 7		Effluent MDL > C, Interim Monitor		
79	Diethyl Phthalate	120000	Y	Y	0.7		All ND MDL<=C, MDL=MEC	0.7	MEC<C, go to Step 5	Y	Y	0.24		FALSE	No detected value of B, Step 7				
80	Dimethyl Phthalate	2900000	Y	Y	0.7		All ND MDL<=C, MDL=MEC	0.7	MEC<C, go to Step 5	Y	Y	0.24		FALSE	No detected value of B, Step 7				
81	Di-n-Butyl Phthalate	12000	Y	Y	1		All ND MDL<=C, MDL=MEC	1	MEC<C, go to Step 5	Y	Y	0.5		FALSE	No detected value of B, Step 7				
82	2,4-Dinitrotoluene	9.1	Y	Y	0.6		All ND MDL<=C, MDL=MEC	0.6	MEC<C, go to Step 5	Y	Y	0.27		FALSE	No detected value of B, Step 7				
83	2,6-Dinitrotoluene	No Criteria	Y	Y	0.6		No Criteria	0.6	No Criteria	Y	Y	0.29		FALSE	No Criteria	No Criteria	Uo - No Criteria		
84	Di-n-Octyl Phthalate	No Criteria	Y	Y	0.9		No Criteria	0.9	No Criteria	Y	Y	0.38		FALSE	No Criteria	No Criteria	Uo - No Criteria		
85	1,2-Diphenylhydrazine	0.54	Y	Y	0.6		MDL > C, Interim Monitor, Go To Step 5			Y			0.0037		B<C, Step 7		Effluent MDL > C, Interim Monitor		
86	Fluoranthene	370	Y	Y	0.03		All ND MDL<=C, MDL=MEC	0.03	MEC<C, go to Step 5	Y			0.011		B<C, Step 7				
87	Fluorene	14000	Y	Y	0.02		All ND MDL<=C, MDL=MEC	0.02	MEC<C, go to Step 5	Y			0.00208		B<C, Step 7				
88	Hexachlorobenzene	0.00077	Y	Y	0.4		MDL > C, Interim Monitor, Go To Step 5			Y			0.0000202		B<C, Step 7		Effluent MDL > C, Interim Monitor		
89	Hexachlorobutadiene	50	Y	Y	0.7		All ND MDL<=C, MDL=MEC	0.7	MEC<C, go to Step 5	Y	Y	0.3		FALSE	No detected value of B, Step 7				
90	Hexachlorocyclopentadiene	17000	Y	Y	0.4		All ND MDL<=C, MDL=MEC	0.4	MEC<C, go to Step 5	Y	Y	0.31		FALSE	No detected value of B, Step 7				
91	Hexachloroethane	8.9	Y	Y	0.6		All ND MDL<=C, MDL=MEC	0.6	MEC<C, go to Step 5	Y	Y	0.2		FALSE	No detected value of B, Step 7				
92	Indeno(1,2,3-cd)Pyrene	0.049	Y	Y	0.04		All ND MDL<=C, MDL=MEC	0.04	MEC<C, go to Step 5	Y			0.004		B<C, Step 7				
93	Isophorone	600	Y	Y	0.8		All ND MDL<=C, MDL=MEC	0.8	MEC<C, go to Step 5	Y	Y	0.3		FALSE	No detected value of B, Step 7				
94	Naphthalene	No Criteria	Y	N	0.05	0	No Criteria	0	No Criteria	Y			0.0023		No Criteria	No Criteria	Uo - No Criteria		
95	Nitrobenzene	1900	Y	Y	0.7		All ND MDL<=C, MDL=MEC	0.7	MEC<C, go to Step 5	Y	Y	0.25		FALSE	No detected value of B, Step 7				
96	N-Nitrosodimethylamine	8.1	Y	Y	0.6		All ND MDL<=C, MDL=MEC	0.6	MEC<C, go to Step 5	Y	Y	0.3		FALSE	No detected value of B, Step 7				
97	N-Nitroso-di-n-Propylamine	1.4	Y	Y	0.8		All ND MDL<=C, MDL=MEC	0.8	MEC<C, go to Step 5	Y	Y	0.001		FALSE	No detected value of B, Step 7				
98	N-Nitrosodiphenylamine	16	Y	Y	0.7		All ND MDL<=C, MDL=MEC	0.7	MEC<C, go to Step 5	Y	Y	0.001		FALSE	No detected value of B, Step 7				
99	Phenanthrene	No Criteria	Y	Y	0.03		No Criteria	0.03	No Criteria	Y			0.0061		No Criteria	No Criteria	Uo - No Criteria		
100	Pyrene	11000	Y	Y	0.03		All ND MDL<=C, MDL=MEC	0.03	MEC<C, go to Step 5	Y			0.0051		B<C, Step 7				
101	1,2,4-Trichlorobenzene	No Criteria	Y	Y	0.6		No Criteria	0.6	No Criteria	Y	Y	0.3		FALSE	No Criteria	No Criteria	Uo - No Criteria		
102	Aldrin	0.00014	Y	Y	0.003		MDL > C, Interim Monitor, Go To Step 5								No detected value of B, Step 7		Effluent MDL > C, Interim Monitor		
103	alpha-BHC	0.013	Y	Y	0.003		All ND MDL<=C, MDL=MEC	0.003	MEC<C, go to Step 5	Y			0.000496		B<C, Step 7				
104	beta-BHC	0.046	Y	Y	0.004		All ND MDL<=C, MDL=MEC	0.004	MEC<C, go to Step 5	Y			0.000413		B<C, Step 7				
105	gamma-BHC	0.063	Y	Y	0.003		All ND MDL<=C, MDL=MEC	0.003	MEC<C, go to Step 5	Y			0.0007034		B<C, Step 7				
106	delta-BHC	No Criteria	Y	Y	0.002		No Criteria	0.002	No Criteria	Y			0.000042		No Criteria	No Criteria	Uo - No Criteria		
107	Chlordane (303d listed)	0.00059	Y	Y	0.005		MDL > C, Interim Monitor, Go To Step 5			Y			0.00018		B<C, Step 7		Effluent MDL > C, Interim Monitor		
108	4,4'-DDT (303d listed)	0.00059	Y	Y	0.002		MDL > C, Interim Monitor, Go To Step 5			Y			0.000066		B<C, Step 7		Effluent MDL > C, Interim Monitor		
109	4,4'-DDE (linked to DDT)	0.00059	Y	Y	0.002		MDL > C, Interim Monitor, Go To Step 5			Y			0.000693		Y		B > C [0.000693 ug/l vs 0.000590ug/l]	Y	
110	4,4'-DDD	0.00084	Y	Y	0.003		MDL > C, Interim Monitor, Go To Step 5			Y			0.000313		B<C, Step 7		Effluent MDL > C, Interim Monitor		
111	Dieldrin (303d listed)	0.00014	Y	Y	0.002		MDL > C, Interim Monitor, Go To Step 5			Y			0.000264		Y		B > C [0.000264 ug/l vs 0.000140ug/l]	Y	
112	alpha-Endosulfan	0.0087	Y	Y	0.002		All ND MDL<=C, MDL=MEC	0.002	MEC<C, go to Step 5	Y			0.000031		B<C, Step 7				
113	beta-Endosulfan	0.0087	Y	Y	0.002		All ND MDL<=C, MDL=MEC	0.002	MEC<C, go to Step 5	Y			0.000069		B<C, Step 7				
114	Endosulfan Sulfate	240	Y	Y	0.002		All ND MDL<=C, MDL=MEC	0.002	MEC<C, go to Step 5	Y			0.0000819		B<C, Step 7				
115	Endrin	0.0023	Y	Y	0.002		All ND MDL<=C, MDL=MEC	0.002	MEC<C, go to Step 5	Y			0.000036		B<C, Step 7				
116	Endrin Aldehyde	0.81	Y	Y	0.002		All ND MDL<=C, MDL=MEC	0.002	MEC<C, go to Step 5						No detected value of B, Step 7				
117	Heptachlor	0.00021	Y	Y	0.003		MDL > C, Interim Monitor, Go To Step 5			Y			0.000018		B<C, Step 7		Effluent MDL > C, Interim Monitor		
118	Heptachlor Epoxide	0.00011	Y	Y	0.003		MDL > C, Interim Monitor, Go To Step 5			Y			0.000094		B<C, Step 7		Effluent MDL > C, Interim Monitor		
119-125	PCBs sum (2)	0.00017	Y	Y	0.03		MDL > C, Interim Monitor, Go To Step 5								No detected value of B, Step 7		Effluent MDL > C, Interim Monitor		
126	Toxaphene	0.0002	Y	Y	0.4		MDL > C, Interim Monitor, Go To Step 5								No detected value of B, Step 7		Effluent MDL > C, Interim Monitor		
	Tributylin	0.01					No Effluent Data			Y	Y	0.001		FALSE	No detected value of B, Step 7		Ud-No Effluent Data		
	Total PAHs	15					No Effluent Data			Y			0.052	B MDL=C, Monitoring Required	B<C, Step 7	0	No Effluent Data on Total PAHs - Individual PAHs above.		

a. The most stringent of salt and fresh water criteria were selected for this analysis.

b. According to Table 1 of Section (b)(1) of CTR (40CFR 131.36), those criteria should use Basin Plan objectives; criteria for Se and CN are specified by the NTR.

c. Criteria for copper is taken from CTR. CTR criteria for copper is expressed as dissolved metals. The copper criter in the table is adjusted by dividing a factor of 0.83 to convert the dissolved to total metal concentration.

The freshwater criteria for Selenium is taken from NTR.

d. Acronyms in the "Final Result" column:

Ud: Cannot determine reasonable potential due to the absence of data, or because Minimum DL is greater than water quality objective or CTR criteria

Uo: No criteria available

IM: interim monitoring is required

ConocoPhillips
Attachment 6
WQBEL Calculations E-003

Beginning																								
	Constituent name	RP?	Acute ECA	Chronic ECA	Human Health ECA	CV, by SIP Guidance	Acute ECA (Sigma^2)	Acute ECA Sigma	Chronic ECA (Sigma^2)	Chronic ECA Sigma	Acute ECA Multiplier	Chronic ECA Multiplier	Acute LTA	Chronic LTA	AMEL Sigma^2	AMEL Sigma	MDEL Multiplier	AMEL Multiplier	MDEL	AMEL	MDEL Human Health	AMEL Human Health	Daily Maximum	Monthly Average
A	B	C	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG			AH	AI	AJ	AK	AL	AM	AN
1	Antimony																							
2	Arsenic [b]	Y	69	36	No HH Criteria	0.6	0.307485	0.554513	0.086178	0.29356	0.321083	0.527433	22.15474	18.9876	0.086178	0.29356	3.114457	1.552425	59.136	29.477			59.14	29.48
3	Beryllium																							
4	Cadmium [b]																							
5a	Chromium (III)																							
5b	Chromium (VI) [b]																							
6	Copper [c]	Y	5.78313253	3.734939759	No HH Criteria	0.6	0.307485	0.554513	0.086178	0.29356	0.321083	0.527433	1.856867	1.969932	0.086178	0.29356	3.114457	1.552425	5.783	2.883			5.78	2.88
7	Lead [b]	Y	32.07378042	1.249869176	No HH Criteria	0.6	0.307485	0.554513	0.086178	0.29356	0.321083	0.527433	10.29835	0.659223	0.086178	0.29356	3.114457	1.552425	2.053	1.023			2.05	1.02
8	Mercury (303d listed) [b]																							
9	Nickel [b]	Y	74.74747475	8.282828283	4600	0.6	0.307485	0.554513	0.086178	0.29356	0.321083	0.527433	24.00016	4.368641	0.086178	0.29356	3.114457	1.552425	13.606	6.782	9228.47012	4600.00000	13.61	6.78
10	Selenium (303d listed) [b]	Y	20	5	No HH Criteria	0.6	0.307485	0.554513	0.086178	0.29356	0.321083	0.527433	6.421664	2.637167	0.086178	0.29356	3.114457	1.552425	8.213	4.094			8.21	4.09
11	Silver [b]																							
12	Thallium																							
13	Zinc [b]	Y	64.33273609	64.33273609	No HH Criteria	0.6	0.307485	0.554513	0.086178	0.29356	0.321083	0.527433	20.65616	33.93124	0.086178	0.29356	3.114457	1.552425	64.333	32.067			64.33	32.07
14	Cyanide [b]																							
15	Asbestos																							
16	2,3,7,8 TCDD (303d listed)	Y			0.000000014	0.6	0.307485	0.554513	0.086178	0.29356	0.321083	0.527433			0.086178	0.29356	3.114457	1.552425	0.000	0.000	0.00000002809	0.000000014		
17	Acrolein																							
18	Acrylonitrile																							
19	Benzene																							
20	Bromoform																							
21	Carbon Tetrachloride																							
22	Chlorobenzene																							
23	Chlorodibromomethane																							
24	Chloroethane																							
25	2-Chloroethylvinyl ether																							
26	Chloroform																							
27	Dichlorobromomethane																							
28	1,1-Dichloroethane																							
29	1,2-Dichloroethane																							
30	1,1-Dichloroethylene																							
31	1,2-Dichloropropane																							
32	1,3-Dichloropropylene																							
33	Ethylbenzene																							
34	Methyl Bromide																							
35	Methyl Chloride																							
36	Methylene Chloride																							
37	1,1,2,2-Tetrachloroethane																							
38	Tetrachloroethylene																							
39	Toluene																							
40	1,2-Trans-Dichloroethylene																							
41	1,1,1-Trichloroethane																							
42	1,1,2-Trichloroethane																							
43	Trichloroethylene																							
44	Vinyl Chloride																							
45	2-Chlorophenol																							
46	2,4-Dichlorophenol																							
47	2,4-Dimethylphenol																							
48	2-Methyl- 4,6-Dinitrophenol																							
49	2,4-Dinitrophenol																							
50	2-Nitrophenol																							
51	4-Nitrophenol																							
52	3-Methyl 4-Chlorophenol																							
53	Pentachlorophenol																							
54	Phenol																							
55	2,4,6-Trichlorophenol																							
56	Acenaphthene																							
57	Acenaphthylene																							
58	Anthracene																							
59	Benzidine																							
60	Benzo(a)Anthracene																							
61	Benzo(a)Pyrene																							
62	Benzo(b)Fluoranthene																							
63	Benzo(ghi)Perylene																							
64	Benzo(k)Fluoranthene																							

ConocoPhillips
Attachment 6
WQBEL Calculations E-003

Beginning			Acute ECA	Chronic ECA	Human Health ECA	CV, by SIP Guidance	Acute ECA (Sigma^2)	Acute ECA Sigma	Chronic ECA (Sigma^2)	Chronic ECA Sigma	Acute ECA Multiplier	Chronic ECA Multiplier	Acute LTA	Chronic LTA	AMEL Sigma^2	AMEL Sigma	MDEL Multiplier	AMEL Multiplier	MDEL	AMEL	MDEL Human Health	AMEL Human Health	Daily Maximum	Monthly Average	
	Constituent name	RP?																							
65	Bis(2-Chloroethoxy)Methane																								
66	Bis(2-Chloroethyl)Ether																								
67	Bis(2-Chloroisopropyl)Ether																								
68	Bis(2-Ethylhexyl)Phthalate																								
69	4-Bromophenyl Phenyl Ether																								
70	Butylbenzyl Phthalate																								
71	2-Chloronaphthalene																								
72	4-Chlorophenyl Phenyl Ether																								
73	Chrysene																								
74	Dibenzo(a,h)Anthracene																								
75	1,2-Dichlorobenzene																								
76	1,3-Dichlorobenzene																								
77	1,4-Dichlorobenzene																								
78	3,3 Dichlorobenzidine																								
79	Diethyl Phthalate																								
80	Dimethyl Phthalate																								
81	Di-n-Butyl Phthalate																								
82	2,4-Dinitrotoluene																								
83	2,6-Dinitrotoluene																								
84	Di-n-Octyl Phthalate																								
85	1,2-Diphenylhydrazine																								
86	Fluoranthene																								
87	Fluorene																								
88	Hexachlorobenzene																								
89	Hexachlorobutadiene																								
90	Hexachlorocyclopentadiene																								
91	Hexachloroethane																								
92	Indeno(1,2,3-cd)Pyrene																								
93	Isophorone																								
94	Naphthalene																								
95	Nitrobenzene																								
96	N-Nitrosodimethylamine																								
97	N-Nitrosodi-n-Propylamine																								
98	N-Nitrosodiphenylamine																								
99	Phenanthrene																								
100	Pyrene																								
101	1,2,4-Trichlorobenzene																								
102	Aldrin																								
103	alpha-BHC																								
104	beta-BHC																								
105	gamma-BHC																								
106	delta-BHC																								
107	Chlordane (303d listed)																								
108	4,4'-DDT (303d listed)																								
109	4,4'-DDE (linked to DDT)	Y	0	0	0.00059	0.6	0.307485	0.554513	0.086178	0.29356	0.321083	0.527433	0.00	0	0.086178	0.29356	3.114457	1.552425	0.000	0.000	0.00118	0.00059			
110	4,4'-DDD																								
111	Dieldrin (303d listed)	Y	0.24	0.0019	0.00014	0.6	0.307485	0.554513	0.086178	0.29356	0.321083	0.527433	0.07706	0.001002	0.086178	0.29356	3.114457	1.552425	0.003	0.002	0.00028	0.00014			
112	alpha-Endosulfan																								
113	beta-Endolsulfan																								
114	Endosulfan Sulfate																								
115	Endrin																								
116	Endrin Aldehyde																								
117	Heptachlor																								
118	Heptachlor Epoxide																								
119-125	PCBs sum (2)																								
126	Toxaphene																								
	Tributylin																								
	Total PAHs																								

ConocoPhillips San Francisco Refinery
Attachment 7
General Basis for Final Compliance Dates [1]
for Discharges North of the Dumbarton Bridge
Revised March 21, 2005

Constituent	Reference for applicable standard	Compliance date and Basis
Cyanide Selenium	NTR	**April 27, 2010** Basis is the SIP.
Copper (salt)	CTR	**May 17, 2010** Bases are CTR and SIP.
Mercury	Numeric Basin Plan (BP)	**April 27, 2010** Basis is the Basin Plan, See note [2a].
Dioxins/Furans	Narrative BP using SIP methodology	**10-yr from effective date of permit** (which is when new standard is adopted; no sunset date). Basis is the Basin Plan, see note [2b].
4,4-DDE, Dieldrin, and PCBs	CTR	**May 17, 2010** Basis is the CTR and SIP.

[1] These dates are maximum allowable compliance dates applicable. As required by the Basin Plan, CTR, SIP, and 40CFR122.47, compliance should be as short as possible. These are only applicable for discharges north of the Dumbarton Bridge because applicable criteria for the south bay are different than those cited above.

- For pollutants where there are planned TMDLs or SSOs, and final WQBELs may be affected by those TMDLs and SSOs, maximum timeframes may be appropriate due the uncertain length of time it takes to develop the TMDL/SSO.
- However, for pollutants without planned TMDLs or SSOs, the State Board in the EBMUD remand order (WQO 2002-0012), directs the Regional Board to establish schedules that are as short as feasible in accordance with requirements.

[2] The Basin Plan provides for a 10-year compliance schedule for implementation of measures to comply with new standards as of the effective date of those standards. This provision has been construed to authorize compliance schedules for new interpretations of existing standards, such as the numeric and narrative water quality objectives specified in the Basin Plan, if the new interpretations result in more stringent limits than in the previous permit.

a. For the numeric objectives in place since the 1995 Basin Plan, due to the adoption of the SIP, the Water Board has newly interpreted these objectives. The effective date of this new interpretation is the effective date of the SIP (April 28, 2000) for implementation of these numeric Basin Plan objectives.

b. For narrative objectives, the Board newly interpreted these objectives using best professional judgment as defined in the Basin Plan for each permit. Therefore, the effective date of this new interpretation will be the effective date of the permit.